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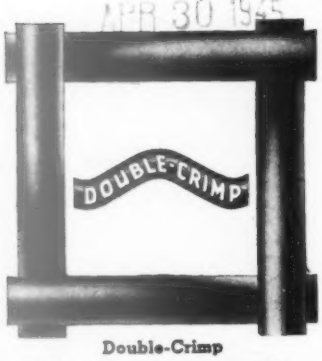
PIT AND QUARRY

APRIL, 1945

TOTAL NET PAID CIRCULATION NOW AT NEW ALL-TIME PEAK — OVER 7,500

FOR 28 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

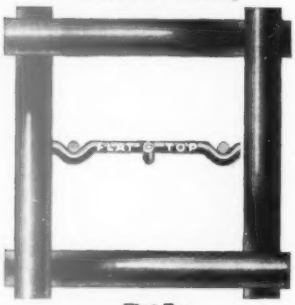
APR 30 1945



Double-Crimp

Arch-Crimp

Intermediate-Crimp



Flat-Top

"The Perfect"

Wire Cloths and Screens

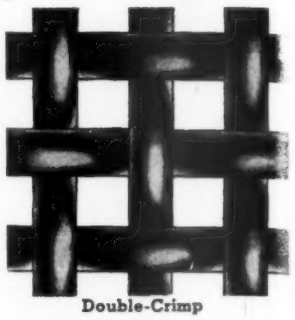
We have been specialists for many years in the making of precision wire cloths, wire screens and woven wire products.

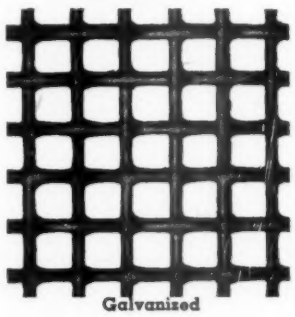
We apply our same precision principles in fabricating wire cloths into finished industrial units, for production or processing equipments or for permanent parts of countless industrial products.

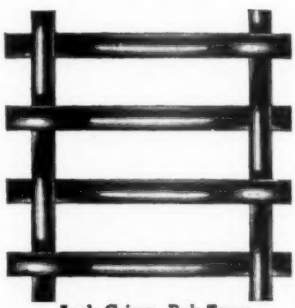
We invite your inquiries for wire cloths of all commercial metals or alloys or weaves, in continuous lengths or cut to size, or processed to meet your individual requirements.

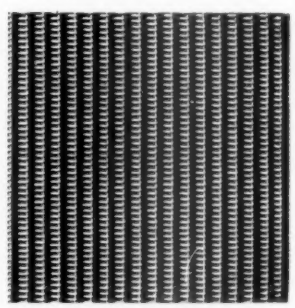
"Perfect" alloys and metals	"Perfect" Wire Cloth weaves	"Perfect" Wire Cloth Processing	"Perfect" Wire Cloth products
Super-Loy	Arch-Crimp	Bending	Baskets
Steel	Coiled	Binding	Circles
Galvanized	Double-Crimp	Brazing	Cones
Tinned	Double-Fill	Calendering	Crates
Stainless Steel	Dutch	Clinching	Cylinders
Nickel-Chromium alloys	Filter	Cutting	Discs
Aluminum	Flat-Top	Dipping	Forms
Brass	Herringbone-Twill	Dishing	Leaves
Bronze	Intermediate-crimp	Flanging	Lengths
Commercial Phosphor	Rek-Tang	Flattening	Panels
Copper	Selvage-Edge	Forming	Pieces
Monel Metal	Straight-Warp	Framing	Racks
Nickel	Stranded	Galvanizing	Ribbons
Any special alloys available in rod or wire form	Sta-Tru	Painting	Rolls
	Triple-Warp	Shearing	Sections
	Twilled	Slitting	Segments
	Twisted-Fill	Trimming	Spaces
	Twisted-Warp	Arc-Welding	Strips
		Gas-Welding	Template shapes
		Spot-Welding	Trays

We will follow your specifications and blue-prints exactly as your production engineers have prepared them—or we will submit suggestions for your approval.


Double-Crimp

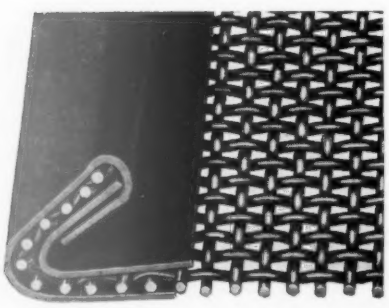

Galvanized


Arch-Crimp Rek-Tang


Dutch Weave

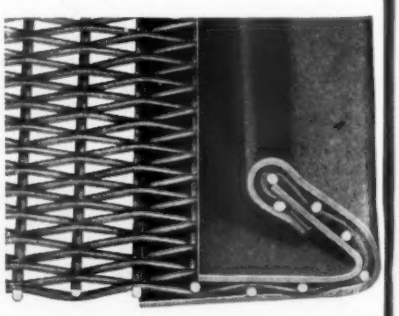
The LUDLOW-SAYLOR WIRE COMPANY ST. LOUIS

Newstead Avenue & Wabash R.R. Zone 10



LUDLOW-SAYLOR PRECISION FABRICATING makes vibrating-screen decks and jackets that are easily handled — quickly installed — need fewer adjustments and renewals.

Illustrations suggest only a few of the many available types of wire cloths and woven wire screens, which may be custom-finished with attachments to fit your particular processing installations.



ALL FROM ONE SOURCE

LINK-BELT

CHAINS, CONVEYING & ELEVATING UNITS, POWER TRANSMISSION MACHINERY

● As specialists in the design, manufacture and application of materials handling and power transmission machinery for all industries, Link-Belt engineers have learned how to apply an extensive knowledge and experience, effectively, to the solution of all kinds of materials handling and power transmitting problems. Some of the many Link-Belt products are here illustrated. Let Link-Belt engineers recommend the types of chains, conveyors, preparation equipment or power transmission machinery which will assure the most efficient production. Send for catalogs.

LINK-BELT COMPANY Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and distributors in principal cities. 9785-D

PIT AND QUARRY, April, 1945. Vol. 37, No. 10. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago 5, Ill. Subscription price $2 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $1 additional for each year. Single copies 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1897.

What makes this Upson-Walton Wire Rope Snatch Block a Better Snatch Block?

HERE'S a safety-locking block . . . designed by Upson-Walton engineers . . . tested in actual use by leading contractors in this country and abroad—a *better* block and a *better* buy. Here's why:

EXTRA HEAVY ONE-PIECE STRAP with specially upset and forged eyes for link connections. An exclusive Upson-Walton process—a stronger strap. In addition, bending stresses in the pin are reduced because link spread design is narrower and a shorter pin can be used.

HEAVY STEEL SHELL PLATES with impressed guard to prevent rope from jamming between shell and sheave. Shell plates and strap riveted securely together.

EXTRA HEAVY CROSS HEADS, swivel links, safety links and pins.

DROP-FORGED HOIST HOOK CONNECTION made from specially selected fine grain steels for added strength and safety.

COLD ROLLED STEEL CENTER PINS and close tolerances between sheave bearing and pin result in longer life for the bearing—and the block.

HEAVY RIM AND TREAD SECTIONS IN SHEAVES provide greater resistance to rope wear.

AVAILABLE IN COMPLETE RANGE OF SIZES for various wire rope diameters.

ESTABLISHED 1871

As we go to Press, Deliveries on most sizes of Upson-Walton Snatch Blocks are good.

THE UPSON-WALTON COMPANY

Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks

MAIN OFFICES AND FACTORY: CLEVELAND 13, OHIO

114 Broad Street, New York 4 — 737 West Jackson Boulevard, Chicago 6 — 241 Oliver Building, Pittsburgh 22

TAKES TOUGHEST POUNDING

on hard rock jobs

HEAVY-DUTY FEATURES of the Goodyear HARD ROCK LUG TIRE

1. Massive lug-bar tread
2. Extra-thick undertread
3. Tread-armored sidewalls
4. Superstrong Rayotwist cord carcass

TOUGHEST of all rock-work tires is Goodyear's Hard Rock Lug — performance-proved by years of standout service on every type of tire-killing ground.

That's because this great bruise resister — specially designed for rough, hard work — is super-armored with extra-heavy under-tread and with massive, wide-base lugs that grip and guard, extending well over the shoulders to *tread-armor* the sidewalls against cuts and bruises.

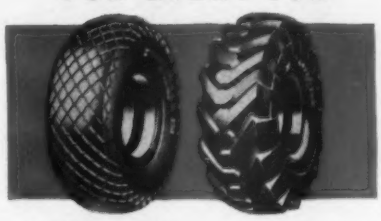
Built from today's available materials — including the mandatory amount of synthetic rubber — this rugged giant is tougher than ever, thanks to its Rayotwist body — made from Goodyear's patented rayon cord. *It's the strongest body we've ever used in a work tire!*

And that tough tread is Goodyear's famous universal two-way tread. No rights, no lefts — same grip reverse or forward. What's more, it's a self-cleaning tread, with straight, wide, V-shaped grooves open at both ends and so pitched that dirt and stones slide out as the tire turns!

Add up all these features and you see why job-wise contractors rate Goodyear Hard Rock Lug tires first choice for the really rough hauls.

BUY WAR BONDS—BUY FOR KEEPS

THERE'S A GOODYEAR FOR EVERY JOB



For drawn vehicles specify Goodyear All-Weather Earth-Mover

For traction in soft going specify Goodyear Sure-Grip

Rayotwist, All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company

GOODYEAR

THE GREATEST NAME IN RUBBER

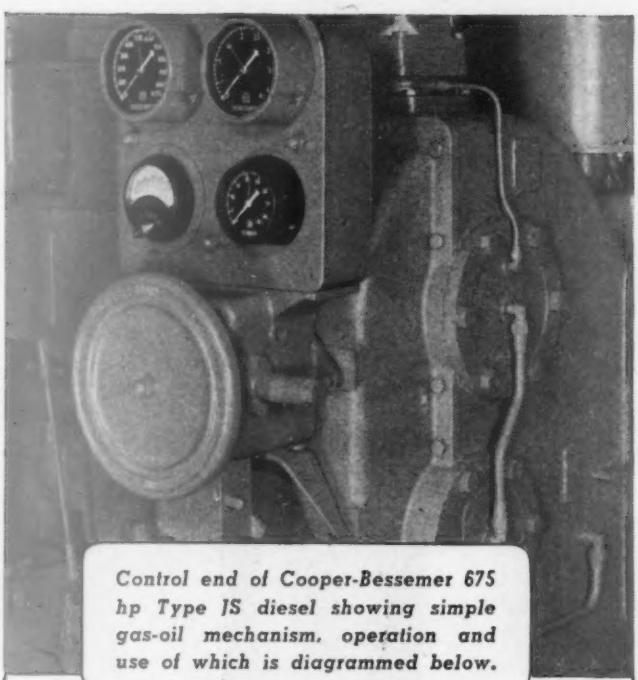
MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Announcing — THE GREATEST DIESEL DEVELOPMENT IN YEARS

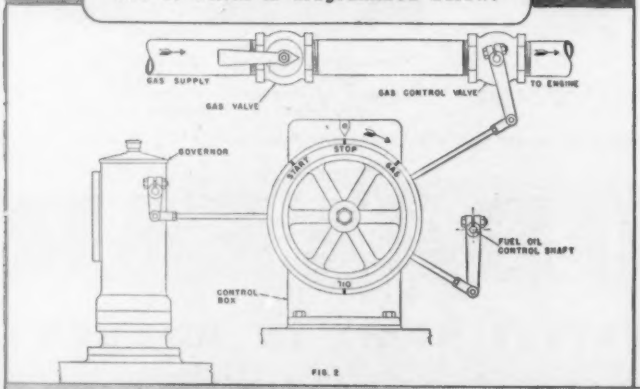
Ever since 1928, Cooper-Bessemer has been experimenting to perfect a means of using gas as a practical fuel for diesel engines; and to permit instantaneous change-over at full load from gas to oil fuel and vice versa. It can now be announced that these efforts have been completely successful — a truly revolutionary accomplishment.

TO POWER USERS THIS DEVELOPMENT MEANS:

1. Diesels, with all their inherent advantages, may now be operated with full efficiency on natural gas, sewage gas, refinery gas, manufactured and coke oven gases, etc., in preference to engines of the electrical ignition type.
2. Gas-fueled engines may now be utilized in locations where an electrical ignition system has heretofore been a preventative hazard.
3. Since the thermal efficiency of a Cooper-Bessemer diesel is so much higher than that of the best gas engines of the other type, *20 to 25% less fuel* will be required for a given power output. Or, correspondingly more work can be done with a fixed or limited fuel supply.
4. A single, surprisingly simple control permits instantaneous change-over to oil fuel or vice versa *at continuous full load.*
5. Fluctuating or insufficient gas supply may be compensated for by the simultaneous use of both fuels in any desired proportion, readily controlled.
6. Gas-oil proportion or complete fuel change-over may be *automatically* controlled to conform exactly with fuel supply and load requirements.



Control end of Cooper-Bessemer 675 hp Type JS diesel showing simple gas-oil mechanism, operation and use of which is diagrammed below.



Engineers and operating officials in many industries will instantly recognize the tremendous economies and revolutionary advantages made possible by this new Cooper-Bessemer development.

THE Cooper-Bessemer CORPORATION

Mt. Vernon, Ohio • Grove City, Pa.

New York Washington Houston Dallas Tulsa
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BUILDERS OF DEPENDABLE ENGINES FOR 112 YEARS

Building better FARM TO MARKET roads will have no small bearing on the nation's prosperity for many years to come. Not only do they provide direct and indirect employment but they are essential to the livelihood, food, clothing, shelter, education and social contacts of millions. Good country roads have long been credited with raising the standard of living and increasing the efficiency of the farmers which, in turn, has meant better living for all.

Better country roads will be built because modern machinery can turn out better materials at lower cost, saving money to build many extra miles. The Cedarapids Junior Tandem is a highly portable plant which can be easily moved about to economically produce, *on the job*, the aggregate in the smaller tonnages required for individual country road jobs. Their low first cost, high efficiency, long trouble-free operation and their ability to handle a wide range of jobs mean more miles of better roads at less cost. Your Iowa dealer will be glad to tell you more.

IOWA MANUFACTURING CO.
Cedar Rapids, Iowa

. . . with aggregate from a Cedarapids Junior Tandem

Cedarapids

Built by IOWA

THE IOWA LINE

of Material Handling Equipment Includes

ROCK AND GRAVEL CRUSHERS
BELT CONVEYORS—STEEL BINS
BUCKET ELEVATORS
VIBRATOR AND REVOLVING SCREENS
STRAIGHT LINE ROCK AND GRAVEL PLANTS
FEEDERS—TRAPS
PORTABLE POWER CONVEYORS
PORTABLE STONE PLANTS
PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
TRAVELING (ROAD MIX) PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS

NEW TIME-S

Highest Quality Lubricants –
Engineering aid...Tested maintenance
schedules, and many other
time-savers now combined into
ONE COMPLETE SERVICE for Contractors!

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates:
Magnolia Petroleum Co., General Petroleum Corp. of Calif.

AVING TEAM

THIS complete lubrication service is made to order for the contractor swamped with jobs marked "RUSH." Here's how it helps you meet and beat urgent deadlines.

Whether you use 7 or 70 different types of machines, you get exactly the right oils and greases for *all* applications—even the most unusual ones. No more time wasted on special orders, follow-ups and extra bookkeeping.

Wherever your operations take you, we *schedule regular deliveries right on the job.* This helps you reduce inventory problems—minimizes out-of-service time for equipment—saves manhours.

The Socony-Vacuum Representative is always ready to cooperate with your men—to help educate "green" hands on where, when and how to lubricate each machine. He also brings you field-proved maintenance schedules—practical help with any "problem" equipment—and qualified engineering aid when needed.

Why be satisfied with fuels and lubricants, alone, when you can get complete contractor's service by specifying Socony-Vacuum products.

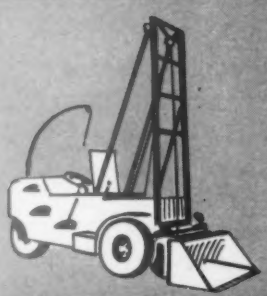
"ON YOUR STAFF—BUT NOT ON YOUR PAYROLL"
Your Socony-Vacuum Representative

CORRECT LUBRICATION FOR EVERY PART OF EVERY MACHINE YOU OPERATE . . .
PLUS
1 ENGINEERING HELP on time-losing operating problems; 2 TESTED MAINTENANCE SCHEDULES that minimize service man-hours—keep equipment on the job; 3 PROMPT, DEPENDABLE DELIVERY—a reliable, on-the-job service that eliminates inventory problems for you!

TUNE IN "INFORMATION PLEASE"—MONDAY EVENINGS, 9:30 E.W.T.—NBC

OPENS NEW CHANNELS for MECHANIZED MATERIALS HANDLING

HAULS



SCOOPS

LIFTS

DUMPS

INSIDE OR *OUT*

SAFE • EFFICIENT • ECONOMICAL HANDLING OF GOODS

To Save Valuable Manhours you'll find SCOOPMOBILE an important step in the right direction.

To Speed Up Your Job Operation you'll want the adaptability of a SCOOPMOBILE to your needs.

To Improve Your Handling Methods you'll need the capable mobility of an economical SCOOPMOBILE.

SCOOPMOBILE has proven itself on the many types of jobs it now serves. The safe dependable operation of SCOOPMOBILE with its many time and labor saving features is giving universal service and top performance to satisfied owners.

•

The practical machine for handling sand, gravel, crushed rock, dirt, sawdust, iron ore, fertilizer, coal, snow, etc.

Write the factory for complete details and the name of the dealer nearest you.

SCOOPMOBILE

KEEPS MATERIALS ON THE MOVE

BUGGYMOBILE
MIXERMOBILE
SCOOPMOBILE

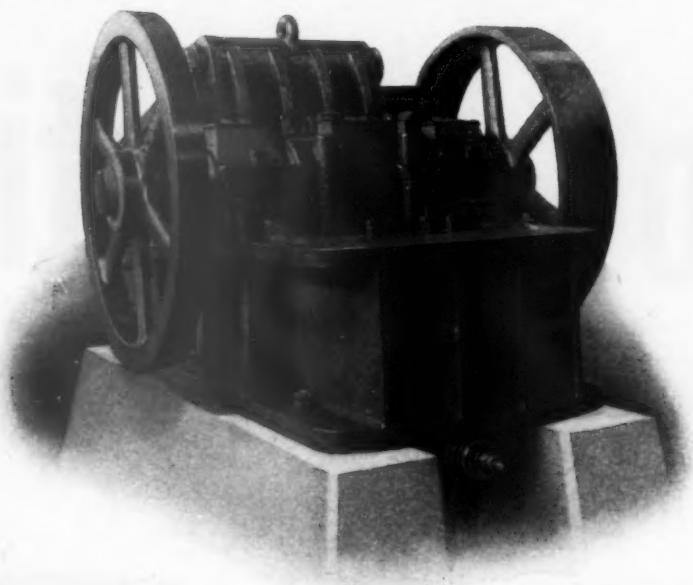
MIXERMOBILE

• MANUFACTURERS •

6855 N. E. HALSEY STREET • • • PORTLAND 16, OREGON

STRENGTH!

. . . greater than a steel casting



TRAYLOR Type H CRUSHER

WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Stokers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Compartment Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

Several pieces of rolled steel plate are welded together to make the Traylor Type H Crusher frame. This is stronger than a steel casting and more dependable than a frame made in any other way of any other material. The welded joints are so thoroughly fused that they are stronger than the parent metal. Actually, the assembled unit is in one piece, exceptionally strong, yet of lighter weight than a casting.

But, the frame is not the only valuable feature of the Type H Crusher. An Improved Swing Jaw Suspension saves power and wear, and Curved Jaw Plates, that are non-choking, enable finer crushing at greater capacity without increase of power used. The product is more cubical and contains less waste fines.

The Type H Crusher is built in eight sizes—from 8" x 12" to 30" x 42" — covering almost every ordinary requirement.

Investigate this machine before you buy. Our representative will be glad to talk it over with you.

Write for Bulletin 2105

TRAYLOR

ENGINEERING & MANUFACTURING CO.

MAIN OFFICE AND WORKS — ALLENTOWN, PENNA., U.S.A.

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ANOTHER WESTINGHOUSE MOTOR "FIRST"

"No Lubrication 'til

PRELUBRICATED BALL BEARINGS PRACTICALLY ELIMINATE BEARING MAINTENANCE...NOW STANDARD ON TYPE CSP MOTORS UP TO 3 HP

Twenty-two years ago Westinghouse was "first" with the "Sealed-Sleeve" Bearing that eliminated oil leakage, kept out dirt, and reduced maintenance on sleeve bearing motors. Today Westinghouse offers the first self-sealed, prelubricated ball bearing that eliminates lubrication for five years. Type CSP prelubricated motors bought now will need no lubrication until 1950.

Prelubricated bearings in Westinghouse motors have been thoroughly field-tested in thousands of Westinghouse lint-free textile motors. Recently a series of bearings was chosen at random and inspected from a group of 600 motors, the first of which were installed between six and seven years ago. All were in perfect condition—even though they had been in operation 24 hours a day and had never been lubricated.

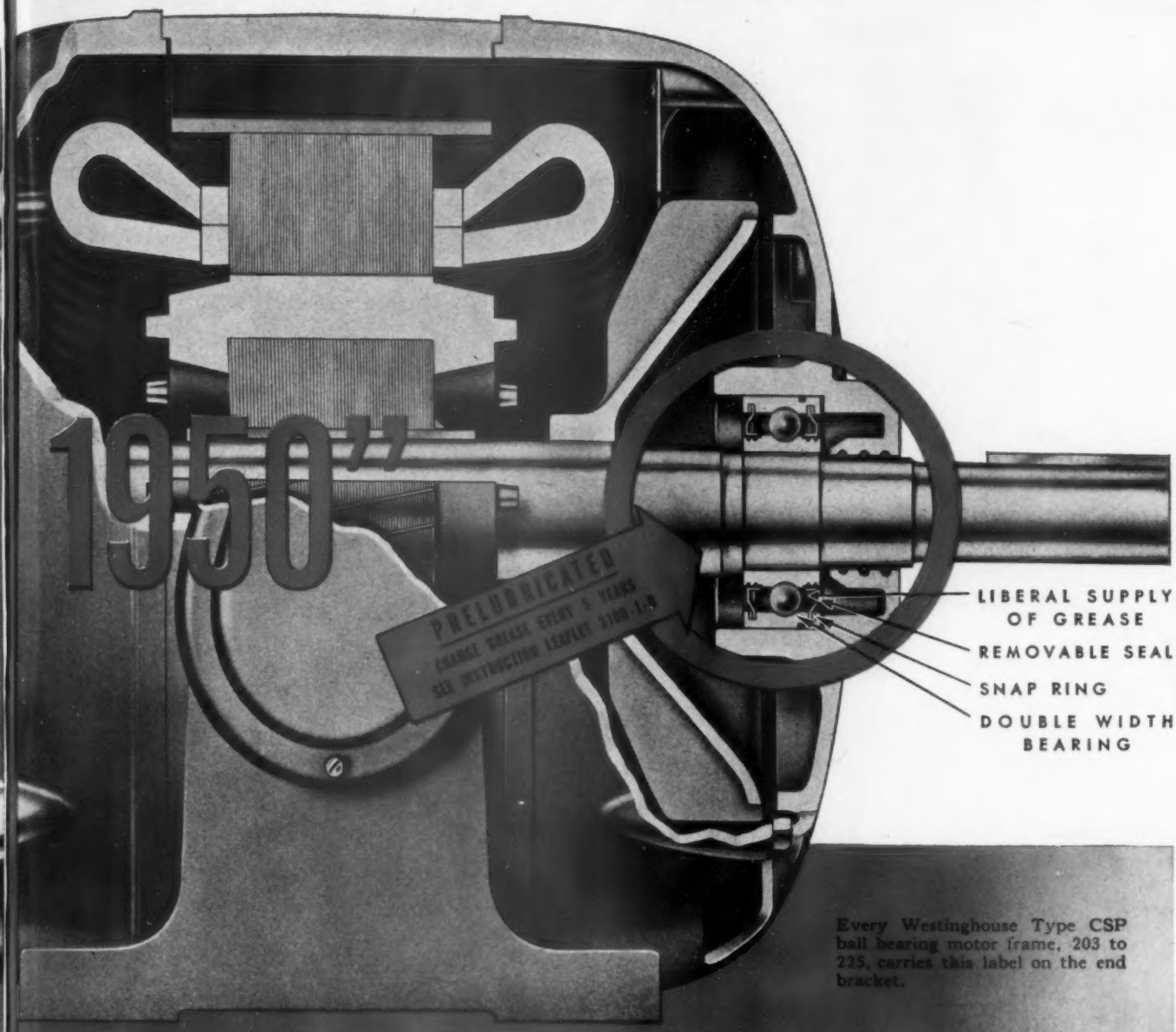
Time-tested special applications such as these have often paved the way for improvements in standard motors. Type CSP motors incorporate the fruits of wide Westinghouse motor application experience. When you buy a Westinghouse Type CSP motor, you get all the latest improvements. For complete information, write for DB 3100-CSP, Westinghouse Electric & Mfg. Co., P.O. Box 868, Pittsburgh 30, Pennsylvania. J-21318

ADVANTAGES

OF WESTINGHOUSE TYPE CSP MOTORS

- PRELUBRICATED SEALED BALL BEARINGS reduce lubrication maintenance . . . assure longer grease life.
- IMPROVED TUFFERNELL INSULATION.
- DYNAMICALLY-BALANCED ROTOR.
- DIE-CAST ROTOR with oversize fan.
- LIBERAL THROUGH-VENTILATION—air enters front, leaves at drive-end of motor.

WESTINGHOUSE

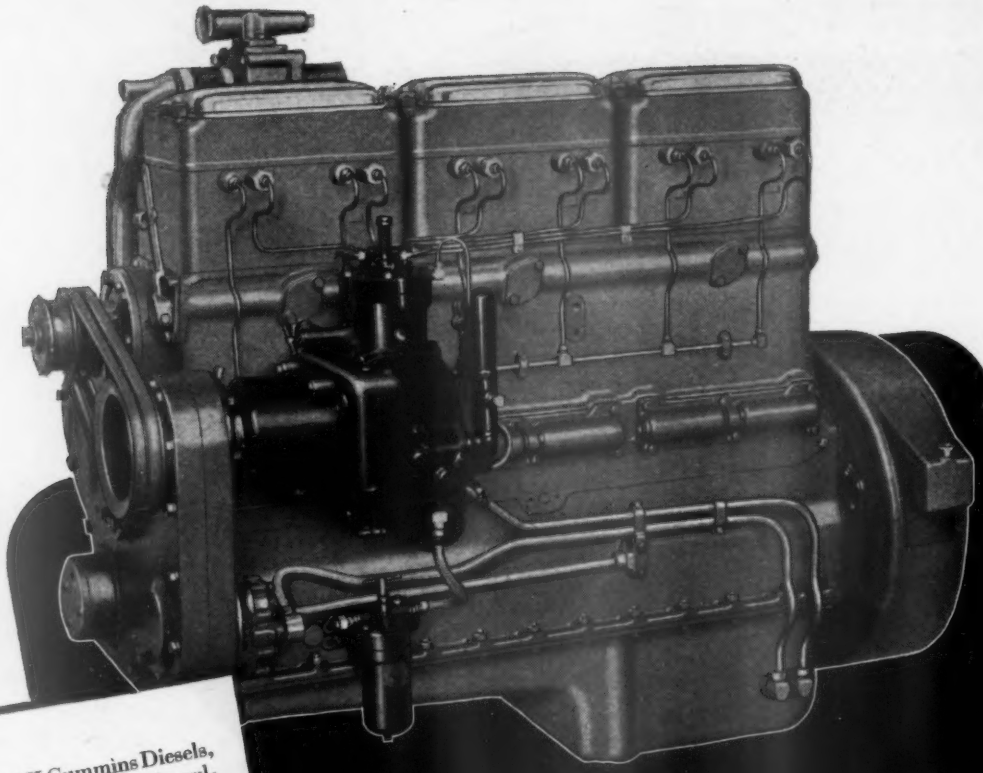


Every Westinghouse Type CSP ball bearing motor frame, 203 to 225, carries this label on the end bracket.

Westinghouse

PRELUBRICATED SEALED BEARING CONSTRUCTION ...retains original grease packing within the stationary seal discs. Bearing chamber accommodates grease sufficient for more than five years of severe service. Held by snap rings, seal discs fit closely over inner race, forming an efficient seal. Snap rings and discs are easily removed to permit packing new grease in bearings.

TYPE CSP MOTORS



H Model H Cummins Diesels, 4⅞" x 6", four or six cylinders, develop their maximum 100 and 150 hp., respectively, at 1800 rpm. Designed for—and proved in—various types of wheel and track-mounted equipment and stationary applications.

NH Series NH-600 and NHS-600 (supercharged) Cummins Diesels, 5⅛" x 6", develop maximum 200 and 275 hp., respectively, at 2100 rpm. Both are six-cylinder, dual valve engines . . . similar in design, weight and dimensions to the Model H. Automotive and industrial models.

L Model L Cummins Diesel, 7" x 10", six cylinders, develops maximum 250 hp. at 1000 rpm. This heavy-duty, medium speed engine is designed for shovels, draglines, cranes, locomotives, etc., and for stationary applications and generating service.

READ the record! The record of Cummins Dependable Diesels in trucks, shovels, compressors, rock crushers, dredges and many other types of heavy-duty construction and material handling equipment. Read that record and you will find proof that Cummins-powered means "powered for profit."

CUMMINS ENGINE CO., INC., Columbus, Ind.

CUMMINS Dependable DIESELS

SINCE 1918...PIONEER OF PROFITABLE POWER THROUGH HIGH-SPEED DIESELS

SHAFER "DE" 22000 BEARINGS

SELF-CONTAINED
SELF-ALIGNING
SELF-CENTERING
under heaviest loads
and adverse
operating conditions

Any experienced engineer recognizes that *most* bearing installations *must* encounter shaft misalignment and deflection . . . end and radial thrust and even heavy shock loads. And more and more engineers are recognizing that only Shafer ConCaVex Bearings have the design and construction that keep them free-rolling, self-aligning and self-centering under *all* such conditions at *all* times. For only Shafer Bearings combine the ball bearing and roller bearing construction . . . only Shafer Bearings combine the low rolling friction of a ball and the high load capacity of a roller. Only Shafer Bearings have such an outstanding record of service on the *tough* installations for the past 25 years. Ask the men who KNOW. SHAFER BEARING CORPORATION, 1434 West Washington Blvd., Chicago 7, Illinois.

The Basic Shafer Idea

Shafer ConCaVex Self-Aligning Bearings combine the advantages of both ball *and* roller bearings. A Shafer Bearing utilizes the effective contact area of a ball many times its size . . . providing automatic end-thrust absorption, superior shock resistance and long life.

1. SHAFER "DE" 22000 SERIES
The self-contained bearing, preadjusted, ready to install, easy to install. Has one piece outer race, two rows of rollers and single inner race for compactness. Maximum capacity.

2. SHAFER DOUBLE ROW BEARING ASSEMBLY
for building into machines, power transmission equipment, etc. Two outer races, two roller assemblies. A single inner race.

3. SHAFER SINGLE ROW BEARING ASSEMBLIES
One outer race, one row of rollers, one inner race. Self-aligning with radial and thrust load capacity.

SHAFER CONCAVEX
SELF-ALIGNING BEARINGS

SELF ALIGNING ROLLER BEARINGS

It pays to be a Bemis Multiwall paper bag Customer

EVEN though direct government purchases have taken a considerable part of our multiwall paper bag production this year, Bemis customers have not suffered . . . they have been supplied on the basis of past purchases, even in the face of the labor shortage and no increase in facilities.

Naturally, the demand for Multiwalls has been greater than the supply. Much as we regret inability to fill all orders, we have felt a responsibility to take care of our regular customers first. Fortunately, we've been able to do that—and right on schedule. If it's humanly possible, we'll keep on maintaining this service.

War or peace, we want our customers to feel that it pays to be Bemis customers.

A major reason we've been able to supply our Multiwall customers is the size and flexibility of our production facilities.

Bemis Multiwall Plants at

PEORIA, ILL.
EAST PEPPERELL, MASS.
MOBILE, ALA.
SAN FRANCISCO, CALIF.
WILMINGTON, CALIF.
ST. HELENS, ORE.

These plants not only give us large production, but also quick accessibility to all parts of the country.

BEMIS BRO. BAG CO. Baltimore • Boston • Brooklyn Buffalo • Charlotte • Chicago Denver • Detroit • Houston • Indianapolis • Kansas City • Los Angeles • Louisville Memphis • Minneapolis • New Orleans • New York City • Norfolk • Oklahoma City • Omaha St. Louis • Salina • Salt Lake City • Seattle • Wichita

for PRIMARY drilling . . .

CLEVELAND WAGON DRILLS

CLEVELAND DR30 WAGON DRILLS are unsurpassed in maneuverability. They drill at any angle and in any direction —flat holes from 4″ to 8′ above ground —also straight up or down. Feed travel is over 8′, permitting 6-foot steel changes, and the machine handles depths to 25′ or more. The DR30 has a double screw U-bar jack, a recoil device to hold drill to its work, an improved centralizer, and a forward leg point to steady the drill. All these features make the Cleveland DR30 the most popular wagon drill ever built. Ask for Bulletin 132.

Help Finish the Fight!
Buy MORE War Bonds!

for SECONDARY drilling . . .

CLEVELAND H10 SINKERS

CLEVELAND H10 SINKERS are favorites in the 45 lb. class. Easily held, these fast cutters have strong rotation, and blow the holes with unfailing certainty. Either wet or dry construction. "T" handle illustrated is standard; open spade handle also available. All standard chuck sizes for collared drill steel, and plain or lugged shanks. Cradle mounting available for 24″, 30″ and 36″ steel changes. The end-seating valve improves with use—no increase in air consumption as the drill grows older. Efficient lubrication of even hard-to-reach spots like flutes of the rifle bar, forward chuck bearing, etc. Bulletin 122 describes Cleveland Sinkers in detail. Ask for it.

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THE CLEVELAND ROCK DRILL COMPANY

Division of The Cleveland Pneumatic Tool Company

CABLE ADDRESS "ROCKDRILL" • CLEVELAND 5, OHIO

LEADERS IN DRILLING EQUIPMENT

How We Keep A Fast Crowd In Line

Here's a *fast* crowd that doesn't give trouble--not the way P&H builds it!

It's plain to see why the crowding action of P&H Electric Shovels is so much livelier — more responsive and powerful. Conical worm gear drive cuts inertia to a minimum — permits the most compact gearing unit possible. Only very short shafting is required; overhung gearing is eliminated. Every ounce of power from the independent crowd motor flows smoothly to the dipper sticks for *snappier* crowding — *faster* retracting.

P&H engineers increase the advantages of the compact, flood-lubricated gear case design by building it integral with the boom. Welded-in construction adds to boom rigidity and strength, while integral shipper shaft housing prevents bearing movement and torque on the boom. The net result in any open-pit operation is bigger and steadier production.

This faster, more dependable crowd is another example of the advanced engineering and simplified design that mark the new P&H Electric Shovels as the greatest forward step in electric shovel history. Behind them is P&H's 60-year leadership in applying electrical power to the movement of heavy loads.

P&H

ELECTRIC SHOVELS

4451 W. National Avenue
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HARNISCHFEGER CORPORATION

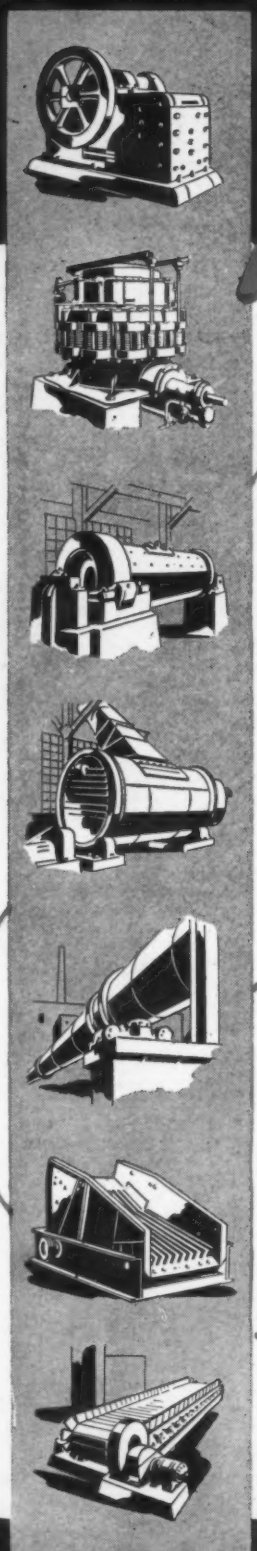
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS • HOISTS • WELDING ELECTRODES • MOTORS

THE GREATEST FORWARD STEP EVER MADE IN ELECTRIC SHOVEL DEVELOPMENT

NORDBERG

Announces a line of

BASIC PROCESSING MACHINERY



For more than fifty years Nordberg has been building heavy equipment for mining, chemical, cement, and allied heavy industrial fields. These many years of experience, engineering "know how" and manufacturing facilities are now available for supplying machinery through a Nordberg subsidiary serving the industries which process basic materials. With the long established line of Nordberg products augmented by an extensive line of processing machinery, it is possible to select much of your equipment from one company—with one responsibility. The better design and construction which has always characterized Nordberg machinery is assurance of that dependable performance so long enjoyed by satisfied Nordberg users.

Primary and Secondary Crushers
Grinding Mills • Feeders • Grizzlies
Rotary Kilns • Coolers • Dryers
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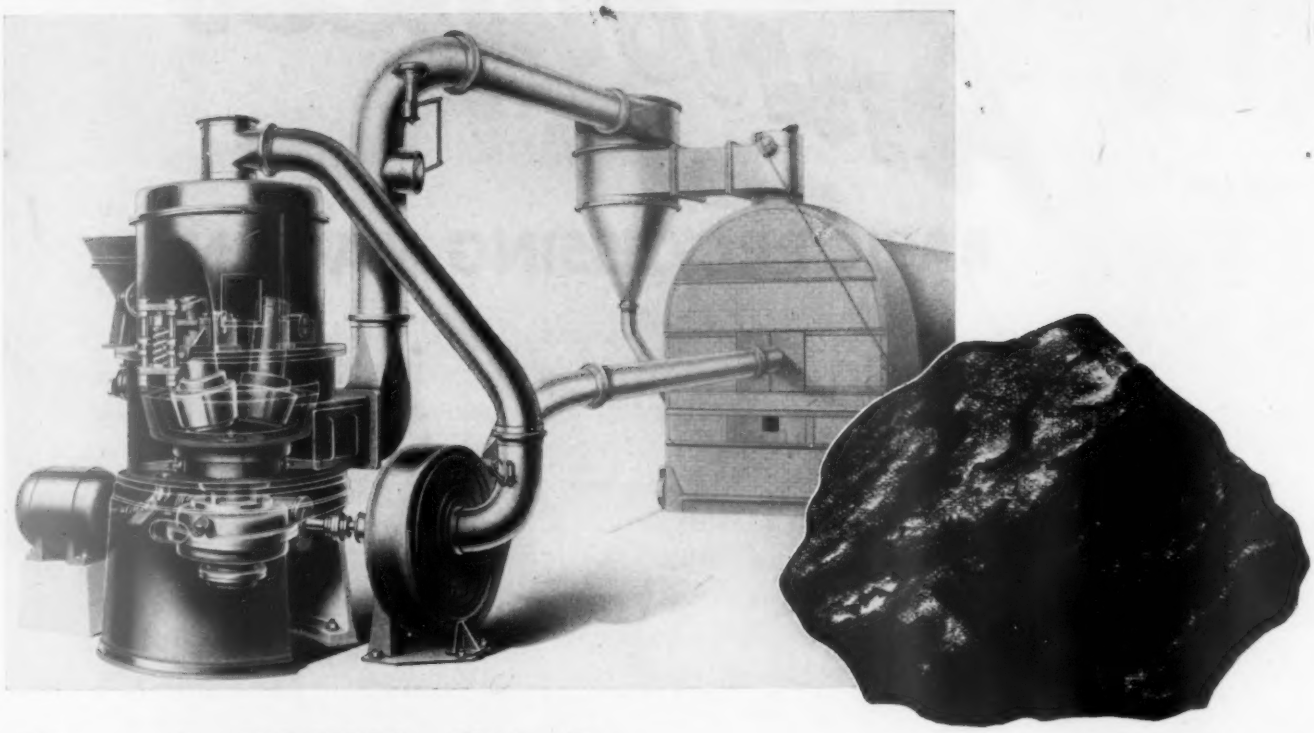
Engineering Service • Plant Design

If you are planning an expansion of your present operations or building a new plant that will require any of the above equipment, let us give you further particulars on machinery and services which are available without obligation.

NORDBERG PROCESS MACHINERY CO.

60 E. 42nd St., New York City, N. Y.

RAYMOND BOWL MILL



Bowl Mill Firing

puts you in line for new economies

The many plants, which have helped to conserve fuel oil and natural gas by substituting powdered coal with Bowl Mill direct-firing, have discovered that this modern method offers new savings in the operation of rotary kilns and industrial furnaces.

It handles any grade or moisture coal . . . operates continuously, month after month, without shut-downs . . . maintains uniform grind at all rates of feed . . . permits easy regulation for fineness or roller adjustment while running . . . is automatic, dustless and quiet.

With the panel board control, very little attention is required by the operator, and one man easily can take care of a battery of Bowl Mills.

For direct-firing cement, lime, dolomite kilns and industrial furnaces, Raymond Bowl Mills will pay back their investment in extra economies.

★

Bowl Mill Advantages

High Availability
Low Maintenance
Power Economies
Thermostatic Control
Tramp Iron Disposal
Wide Range Capacity

BOWL MILL

For further data on the BOWL MILL, write for Catalog No. 43.

RAYMOND PULVERIZER DIVISION

COMBUSTION ENGINEERING COMPANY, INC.

1321 North Branch Street, Chicago 22, Illinois

Sales Offices in Principal Cities

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More real footage for less money

WITH *Thor* DRIFTERS!

8 REASONS WHY

THOR POWER-FEED DRIFTERS SPEED THE DRILLING CYCLE

1. Eliminates Hand Cranking
2. Gives Greater Drilling Performance
3. Reduces Dead Time—Cuts Costs
4. Greater Freedom for Operator
5. Simple to Operate
6. Quicker Steel Changes
7. Extremely Low in Operating Cost
8. Speed of Feed is Semi-Automatic

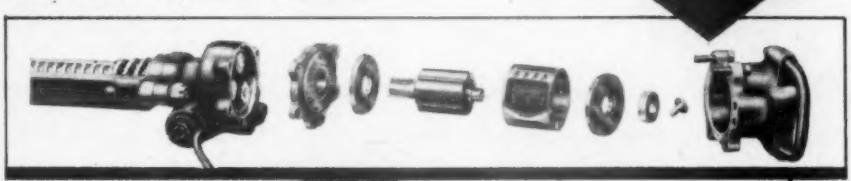
POWERFUL ROTATION AND HOLE BLOWING

Stronger rotation and exceptional hole-cleaning ability are the reasons for Thor Drifters' more-footage performance and extra drilling speed.

Extra-heavy rifle bar assembly and positive-set ratchet-action, plus balanced-power piston action insures dependable rotation to deliver a fresh cut with every blow for rapid advance into the hardest rock.

The exceptional hole-cleaning ability of Thor Drifters adds still further to the penetration rate. Thor design applies a constant jet of air and water at the drill point; provides an extra blast of air when really needed to keep the hole perfectly clean at all times. Automatic lubrication—low air consumption—minimum vibration all serve to make Thor your best bet for fast, low cost drilling.

HERE IT IS!



THE INSIDE STORY OF THOR POWER-FEED!

1. POWER-FEED has an independent, balanced rotary air motor, mounted directly and rigidly on rear end of guide shell.
2. A SUBSTANTIAL PLANETARY GEARING transmits the power from rotor directly to feed screw.
3. ROTOR is perfectly aligned with feed screw by means of splined driving unit. Mechanism is free from shock and thrust.
4. BALL AND ROLLER BEARINGS throughout.
5. ENTIRE POWER-FEED UNIT is completely sealed against dirt.
6. ONE SIMPLE THROTTLE VALVE controls all feeding functions—(1) Rapid Return, (2) Neutral, (3) Slow Drilling, (4) Fast Drilling, and (5) Rapid Advance.
7. SUBSTANTIAL COIL SPRINGS mounted at each end of shell eliminate shock to drill in extreme forward or rear positions.

Thor Drifters are made in two sizes—medium or heavy duty, with hand or power feed.

For complete specifications write for catalog No. 42A.

Thor PORTABLE *Electric & Pneumatic* TOOLS

THESE FEATURES MEAN POWER FOR SPEED IN *ALL* THOR DRIFTERS

MEASURED AIR—The Thor short-travel tubular valve controls air input to .00025"—positive action get full measure of power from ALL the air.

BALANCED POWER—Precise control of air input provides a full cushion of live air at both ends of piston stroke for fully balanced—full-power performance.

SMOOTH OPERATION—Every stroke is powered by the same measured quantity of air for smooth, uniform operation.

OTHER THOR AIR TOOLS

- Sinker Rock Drills
- Sump Pumps
- Stoper Rock Drills
- Hitch Cutters
- Paving Breakers
- Saws

INDEPENDENT PNEUMATIC TOOL CO.
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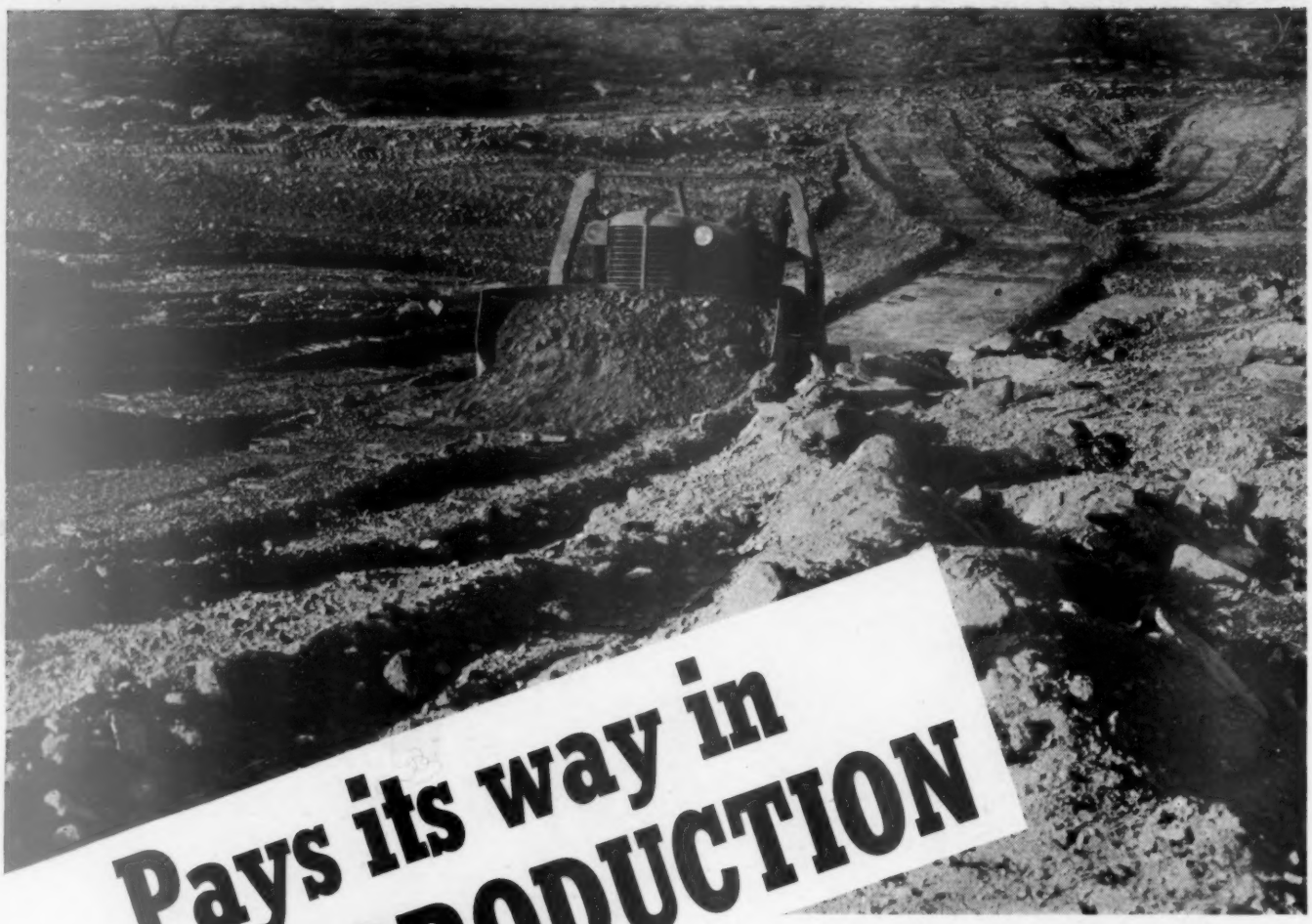


Pays its way in MORE PRODUCTION

2-cycle Diesel tractors help you step up stripping, road-building and cleaning-up work. Their smooth, driving power enables you to handle bulldozing and scraper work faster, move bigger loads with greater ease. They hang on longer — provide greater flexibility in speed with less shifting, because drawbar pull is maintained over a wider speed range.

Tough, rocky soil yields to the smooth, fast power of an Allis-Chalmers Diesel tractor. Here the Model HD-10, with a Baker bulldozer, strips a wide area of this material.

Maintenance is simple! Uniform design and manufacture permit convenient interchange of engine parts between all models — sleeves, pistons, rings, connecting rods, injectors and many others. Reduces parts inventory, saves time and money, simplifies repairs — of particular advantage when operating in remote areas.

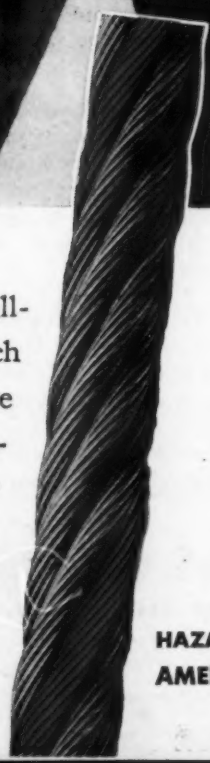
It will pay you to investigate the many EXTRA advantages 2-cycle Diesels provide.

2-Cycle
THE MODERN DIESEL POWER

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

LAY·SET TAKES THE BENDS

● Some machines are constructed with small-diameter sheaves and numerous reverse bends which are hard on wire rope. But that is exactly where Hazard LAY-SET PREFORMED shows up to its best advantage. Being preformed, LAY-SET resists twisting or squirming in sheave grooves. Being free of internal stresses, it can take the bends without undue fatigue. All around, Hazard LAY-SET PREFORMED is a safer, better wire rope. Specify it for your next line.



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HAZARD WIRE ROPE DIVISION
AMERICAN CHAIN & CABLE
BRIDGEPORT

HAZARD LAY·SET *Preformed* WIRE ROPE

In Thousands of *WAR PLANTS*

GATES *Synthetic Rubber* V-Belts

—are giving *BETTER SERVICE*

Than Any V-Belts Ever Made of NATURAL RUBBER!

To meet the unprecedented severity of combat service on U. S. Army tanks, tractors and self-propelled big guns, Gates has developed and built synthetic rubber V-belts to far higher service standards than were ever required of pre-war, natural rubber V-belts!

- **The importance of this fact to industrial V-belt users is this:**

  Every improvement developed by Gates for these Army V-belts has also been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.

In the case of many other products, you must wait until after the war to get the benefit of war-time improvements. But victory depends upon production—and production depends upon V-belts which drive the producing machines. That is why Gates has been able to pass on to you immediately, in your Standard Gates Vulco Ropes, every V-belt improvement which Gates specialized research has developed for use in the Army's motorized equipment.

In addition, where V-belts of special construction are required your Gates Rubber Engineer can supply a Gates V-belt that is precisely engineered to meet your special needs. Whenever you have a drive problem or a V-belt problem, just pick up your telephone directory and look under the heading "Gates Rubber." The Gates Rubber Engineer will bring right into your plant the full benefits of every advance in V-belt construction that Gates specialized research has developed.

—and one of these 5 GATES V-belts will meet any Special need you may have.

- Rayon Cord V-Belts
- Static-Safety V-Belts
- *Special* Synthetic V-Belts
- Cotton Cord V-Belts
- Steel Cable V-Belts

THE GATES RUBBER COMPANY

Engineering Offices and Jobber Stocks in All Large Industrial Centers

Gates

The Mark of Specialized Research

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GATES VULCO ROPE DRIVES

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MEMO
TO ALL CONSTRUCTION SUPTS.
Jim Better look at a HAISS Our loading costs are shameful
For All-Around Service, MODEL 75 3 yds. per min.
For High-Sides Trucks, MODEL 77 3 yds. per min.
For Big Capacity, MODELS 80 & 135 5 & 8 yds. per min.
HAISS

The Haiss Distributor has complete catalog data—or write us.

When you get right down to cases, and *loading cost per yard* is the measuring stick—the Haiss Loader is not high priced at all. It never tried to be a cheap piece of machinery. Its purpose has always been to satisfy the many who wanted the one which would save money in the long run . . . That's why Haiss puts a big, husky gearset into it. One that's engineered for Loader service—with the clutches as well as gears running in oil . . . That's why so much design attention is paid to making the Haiss a machine that *costs least* to maintain . . . You *can't* afford to buy without investigating Haiss first.

GEORGE HAISS MANUFACTURING CO., INC., 142nd ST. AND RIDER AVE., NEW YORK 51, N.Y.

HAISS

PORTABLE CONVEYORS ★ LOADERS ★ CLAMSHELL BUCKETS

"Primacord helps us beat rising costs"

Getting more production out of each explosives load — out of each man's time — is the most logical antidote to rising expenses.

Primacord saves time. More holes are drilled because more holes can be shot at once. Loading, hooking-up and checking are simplified because this detonating fuse makes up with half-hitches and square knots in plain sight. Fewer men can accomplish more with Primacord.

Primacord saves explosives. Loads can be varied to meet conditions, and the detonating wave of Primacord, although practically instantaneous, still moves in sufficient sequence to relieve burdens from row to row. Every cartridge, even in decks, gets a full power detonation. Every shot can accomplish more with Primacord.

Primacord helps achieve safety. It must be detonated, which makes it safer to store, distribute and load. Caps are attached to the trunk line only — none into the hole. Lost time accidents can be reduced with Primacord.

THE ENSIGN-BICKFORD COMPANY · Simsbury, Connecticut

P-4

It's three strikes and out for lost production with Primacord on the mound.

Also
ENSIGN-BICKFORD SAFETY FUSE
Since 1836

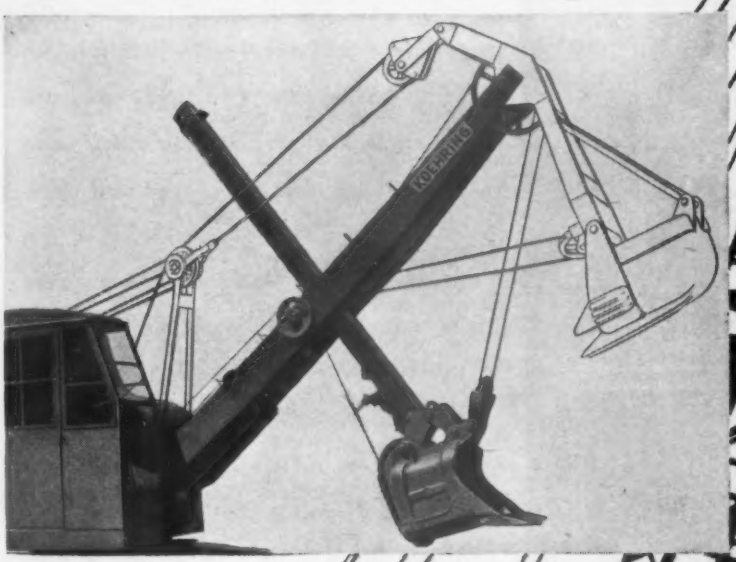
PRIMACORD-BICKFORD

Detonating • Fuse •

All Purpose 205

Koehring 205 Excavator is fully, easily and quickly convertible for a wide variety of job applications. Features like the new 2-in-1 Shovel Boom save hours on every changeover from shovel to pull shovel, cut purchase cost as well. The SAME boom stays in place on BOTH shovel and pull shovel, handles BOTH dipper and back hoe.

KOEHRING CO • *Milwaukee 10, Wis.*

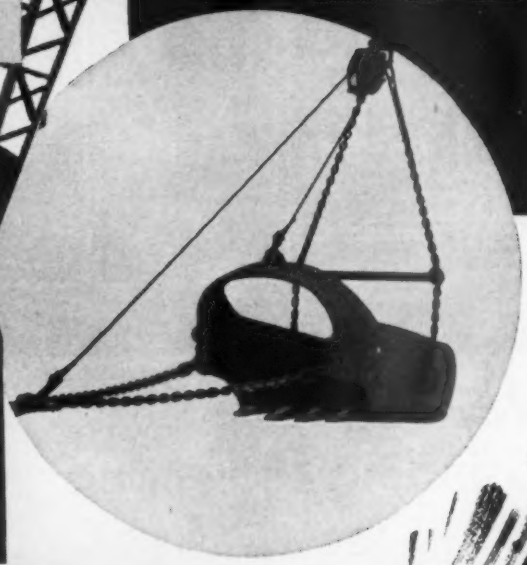


AS CLAMSHELL OR LIFTING CRANE:

Material handling or setting steel is easier with the 205. Steel goes up right . . . off the stock pile fast, then inched into place without jockeying, smooth, fast acting controls simplify accurate clamshell spotting.

AS DRAGLINE:

Tops for drainage work because reserve power outpulls suction, fairlead saves drag cable, traction brakes STOP when you want STOP, fast acting clutches and brakes produce longer bucket casts.



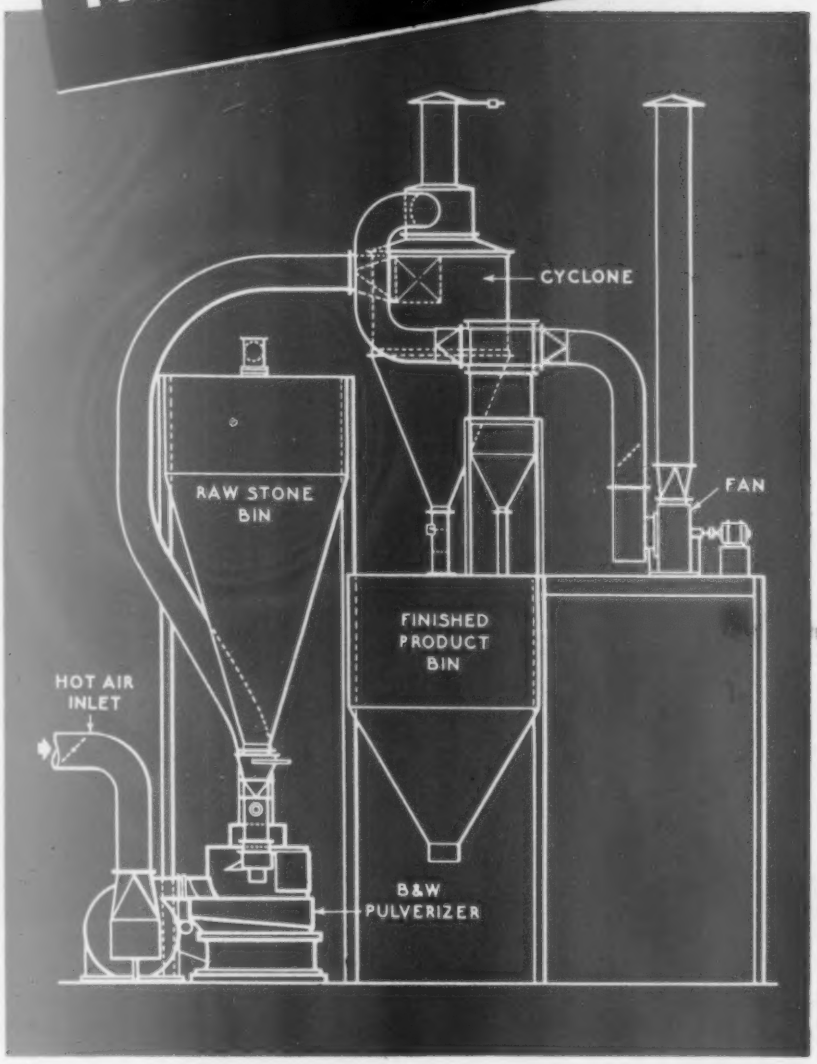
Orders Accepted Now . . . for Post-War Delivery

ARMY E NAVY

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

BLUEPRINT for economical limestone grinding



B&W System for Grinding Limestone

Substantial savings in power and maintenance can be effected in the grinding of limestone by the use of Babcock & Wilcox Pulverizers.

Material handled flows through the mill in a thin, evenly distributed layer. Fines are discharged quickly, and are prevented from accumulating and interfering with the pulverizing operation. Each ball, co-acting with the grinding ring, works effectively over its entire travel, with the grinding pressure applied directly to the material—and to the minimum amount of material at a time. Result is efficient operation at low cost for power.

The large output of the B&W Pulverizer is due to the speed with which material passes through the mill, the plurality of grinding zones, and its positive grinding action. Provision can be made for drying within the system, if desired.

BABCOCK & WILCOX

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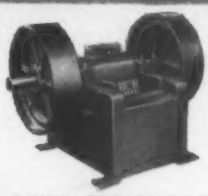
PIONEER

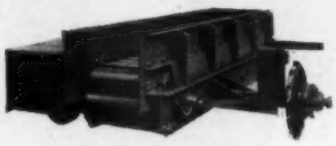
ROCK, ORE and GRAVEL CRUSHING · SCREENING · WASHING · HANDLING

Plants and Equipment



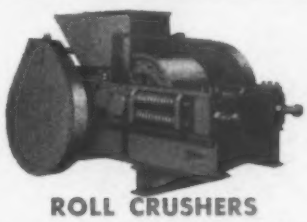
JAW CRUSHERS

Overhead eccentric type for primary crushing. Will handle large material, has downward and forward crushing action. Sturdy design for high tonnage capacity.



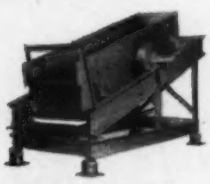
FEEDERS

Regulate flow of material to crushers to assure continuous high production. Medium and heavy duty types, horizontal or inclined; will bypass undersize.



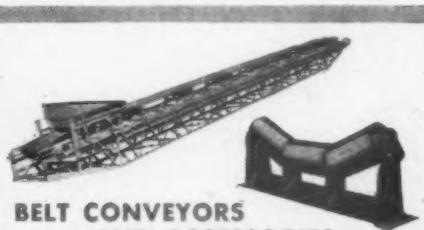
ROLL CRUSHERS

For secondary crushing and fine reduction. Star gears driven by belt and countershaft; manganese shells and anti-friction bearings Delivers large tonnage, accurately sized.



VIBRATOR SCREENS

Positive, uniform agitation. Circular motion for fast, accurate screening. Perfectly balanced, 4 SKF bearings for smooth operation; long life. Sagless, replaceable screens.



BELT CONVEYORS AND ACCESSORIES

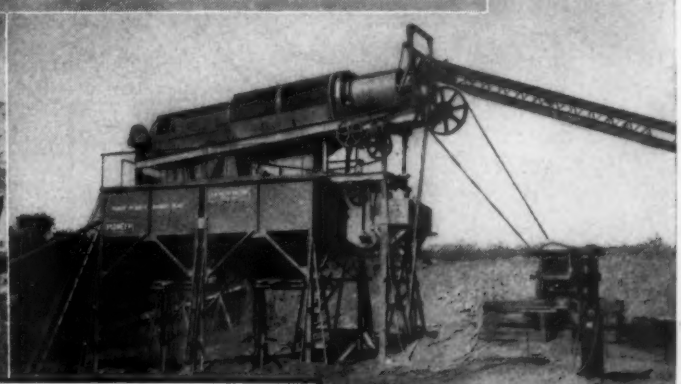
Standard sectional, knock-down type, welded lattice frame reinforced. Plain or anti-friction bearings. Straight or troughing idlers, supports and belt tighteners.

REVOLVING SCREENS

Portable or stationary types, adapted for scalping, washing, scrubbing and sizing, also for dehydrating. Available with spray pipes, conveyors, sand jacket, bins.

Portable Gravel Plants

Have primary and secondary crushers, screen and conveyor. Produce aggregate for road surfacing and other construction. Available in 5 sizes, capacities to 300 t.p.h. Washing and dehydrating equipment optional.



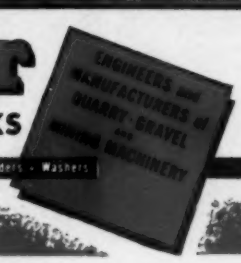
Portable Washing Plants

Washes, screens and dehydrates to produce sand and several sizes of aggregate. Crusher optional. Pioneer also builds portable and stationary quarry plants, as well as travel-mix and central mix bituminous plants.

Pioneer

ENGINEERING WORKS

Jaw Crushers · Roll Crushers · Screens · Conveyors · Feeders · Washers



MINNEAPOLIS 13, MINN

LIKE A CHAMPION SKIER...

FORM-SET ROPE IS *relaxed*

He races down the hillside, quickly gathering speed. Almost nonchalantly, the skier does his turn at a breakneck pace as plumes of feathered snow swirl up and away. He's graceful, effortless, sure . . . because he's *relaxed.*

There's a great deal of that same relaxed quality in Form-Set rope. Form-Set is Bethlehem's preformed, and wire rope in the preformed construction has been relieved of many internal stresses and strains; freed of the locked-in tension that sometimes shortens rope life.

The helical wires don't have a nervous urge to straighten themselves out. Cut a section of Form-Set rope and see what happens. *Nothing.* The wires and strands lie just as they were. They don't pop loose or "wicker."

What's all this add up to? First, longer life (savings for *you*). Second, easy handling (something your *crews* will like). Third, better performance (and that's what everybody wants).

There's real dollar value in Bethlehem Form-Set. On scores of applications subjecting the lines to serious bending fatigue, the preforming process actually adds rope life. This saves you money in the long run. Why not prove it to your own satisfaction with a trial length of Form-Set*—the rope that's *relaxed?*

**All grades, constructions, and sizes of Bethlehem Wire Rope can be supplied with the Form-Set feature.*

BETHLEHEM STEEL

When you think WIRE ROPE . . . think BETHLEHEM

HOW YOU PROFIT BY B G Pre-Engineering

• Here's a *factory-built* conveyor system that will fit your *custom-built* plant completely!

No special engineering. No delay for estimates on cost. No weeks of waiting for factory fabrication. Barber-Greene Conveyors are pre-engineered—pre-fabricated!

B-G Conveyors are built in a variety of sizes, forms and capacities, that they'll meet any material handling requirement . . . can be installed anywhere.

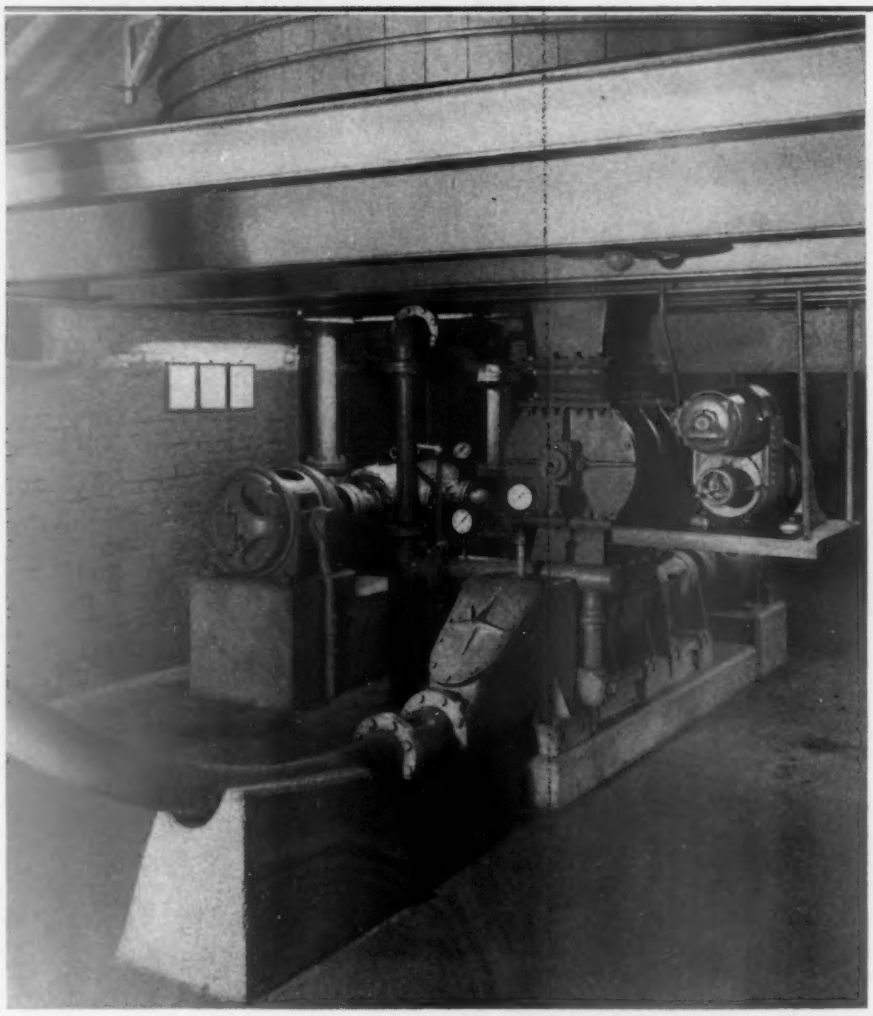
Erection costs? Your own workmen can install a B-G Conveyor system quickly, easily. Units arrive on the job conveniently marked. Factory assembled terminals and standardized units simplify and speed erection.

Barber-Greene Conveyors are *standardized*. You can make additions and alterations rapidly . . . move it to a new location with 100% salvage. Factory assembly assures correct alignment in erection—reduces belt wear and maintenance expense. Write for Catalog 76. Barber-Greene Company, Aurora, Illinois.

45-20

Barber-Greene B G *Constant Flow Equipment*

Conveying Pulverized Phosphate Rock



WITH A

FULLER-KINYON PUMP

AND

FULLER ROTARY COMPRESSOR

One of the leading producers in the East has recently installed a Fuller-Kinyon Conveying System for transporting pulverized phosphate rock from a pulverizer to mixer bin, illustrated in the photograph above.

The pulverized phosphate rock is delivered from a bin, by controlled feed through a Fuller Rotary Feeder, to the Fuller-Kinyon Pump which conveys this material approximately 150 feet to the mixer bin. Rate of conveying 10 to 25 tons per hour.

An interesting and important feature in connection with this installation is the use of a Fuller Rotary Single-stage Compressor, direct connected to the pump, which furnishes air for conveying at the rate of 406 c.f.m. at 15-lb. pressure . . . air where and when needed and at pressures to do the work most economically and efficiently.

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P-71

FULLER COMPANY

FULLER-KINYON, FULLER-FLUXO AND THE AIRVEYOR CONVEYING SYSTEMS . . . ROTARY FEEDERS AND DISCHARGE GATES . . . ROTARY AIR COMPRESSORS AND VACUUM PUMPS . . . AIR-QUENCHING INCLINED-GRATE COOLERS . . . DRY PULVERIZED-MATERIAL COOLER . . . AERATION UNITS . . . MATERIAL-LEVEL INDICATORS . . . MOTION SAFETY SWITCH . . . SLURRY VALVES . . . SAMPLERS

BOILED DOWN

TO SIMPLIFY MOTOR SELECTION

● **This new booklet gives ratings, sizes, characteristics, dimensions, where-to-use data, *and prices* of General Electric a-c and d-c motors, 1/16 to 75 hp. Everything you need to know to select these sizes—all in 16 pages!**

Builders of TRI-CLAD Motors

Buy all the BONDS you can—*and keep all you buy*

To Save Your Time Later Mail This Coupon Today—

General Electric Company, Schenectady 5, N. Y.

Please send me a copy of your Condensed Motor Catalog (No. GEA-4281).

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GENERAL ELECTRIC

The RIGHT TOOL

Makes His Skill the Keener

No watchmaker uses a mechanic's screw driver. He needs the tool fitted to the job to make the most of his skill.

So it is with blasters. They, too, need the explosive best fitted for the job in hand. Used correctly, in the right amount, it produces the blasting result that is wanted.

While some explosives produce the results on many jobs, no one type explosive can be used with effectiveness on every job.

ATLAS EXTRA DYNAMITES (Ammonia Dynamites) Medium velocity. Heaving and stressing action. A good all-around construction and quarry explosive.

ATLAS EXTRA DYNAMITES (AMMONIA DYNAMITES)

GRADE	% Weight Strength	Velocity, feet per second, in the open 1¼" x 8"	Velocity, feet per second, confined in pipe 1½" x 8"	MINIMUM NUMBER OF 8" CARTRIDGES PER 50 LBS. (MAXIMUM 10% MORE)								
				⅞"	1"	1⅛"	1¼"	1½"	1¾"	2"	4"	5"
60%	60	12000	17000	208	160	128	105	72	54	41	11	7
50%	50	10500	13000	208	160	128	105	72	54	41	11	7
45%	45	10000	12900	208	160	128	105	72	54	41	11	7
40%	40	9300	12000	208	160	128	105	72	54	41	11	7
33%	33	8900	11500	208	160	128	105	72	54	41	11	7
30%	30	8500	11000	208	160	128	105	72	54	41	11	7
25%	25	8200	10500	208	160	128	105	72	54	41	11	7
20%	20	7800	10000	208	160	128	105	72	54	41	11	7
15%	15	7300	8500	208	160	128	105	72	54	41	11	7

Talk over your blasting problems with the Atlas Representative. You know your operation. Add his training and experience in both explosives and their application to field conditions and find the one explosive and blasting formula for the right blasting result.

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

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THE "ONE BEST" WAY

TO COMBINE RADIAL AND THRUST LOADS...

Soon, very soon, equipment users are going to refuse to buy "just anything" they can get. During and after reconversion, they're going to pick and choose . . . to demand higher performance levels and lower maintenance costs. Bearings will be basic in new equipment specifications.

That's when Rollway solid-cylindrical Roller Bearings will count high in closing orders. Because Rollway right-angle loading is *"the one best way"* to combine radial and thrust loads . . . the way that reduces unit pressures and cuts down-time for bearing service and replacement.

ROLLWAY BEARING CO., INC.
Syracuse 4, N. Y.
since 1908 makers of

Splits the Load . . .
and Saves the Bearing

Rollway right-angle loading splits compound loads into the two components of *pure radial* and *pure thrust*. It carries each of these components on separate bearing assemblies, at right angles to the roller axis. No oblique loads or load resultants, no compound loads of any form, can bear on either the radial or thrust rollers. Unit pressures are lower. Total load magnitudes per bearing are held within calculated limits. Maintenance and replacement costs are substantially reduced. Send a drawing, or detailed description for free bearing analysis and recommendation by our bearing specialists. No obligation.

ROLLWAY CYLINDRICAL ROLLER BEARINGS

SALES OFFICES: Philadelphia • Boston • Pittsburgh • Youngstown • Cleveland • Detroit • Chicago • St. Paul • Houston • Tulsa • Los Angeles

RECORD

Main slope conveyor carries run-of-mine coal from underground hopper to top of preparation plant. Capacity 1,000 TPH. Belt is U.S. Matchless grade, 54 in. wide, 7-ply, 42-oz. duck; covers: top, 1/4 in., bottom, 1/16 in.

BREAKER

BUILT BY COORDINATED ENGINEERING

Here is another example of engineering teamwork in planning and building an efficient conveyor belt system.

Shown here is one of the two strip mines which established records for coal output for 1944 in their area—a record which has been continuously maintained.

In both cases United States Rubber Company technicians, teamworking with the engineers at the mine and the designers of mechanical equipment, produced the belts capable of handling this enormous volume on a profitable basis.

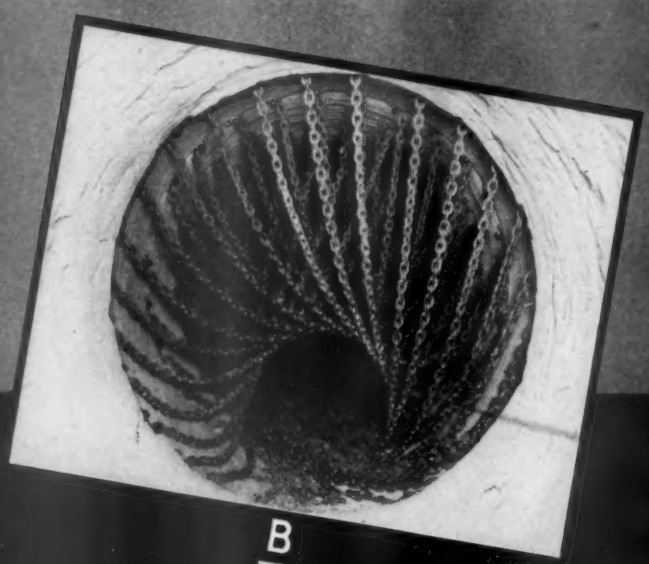
UNITED STATES RUBBER COMPANY

1230 Sixth Avenue • Rockefeller Center • New York 20, N.Y. • *In Canada:* Dominion Rubber Company, Ltd.

Serving Through Science

3 WAYS TO SAVE FUEL

A



B

C

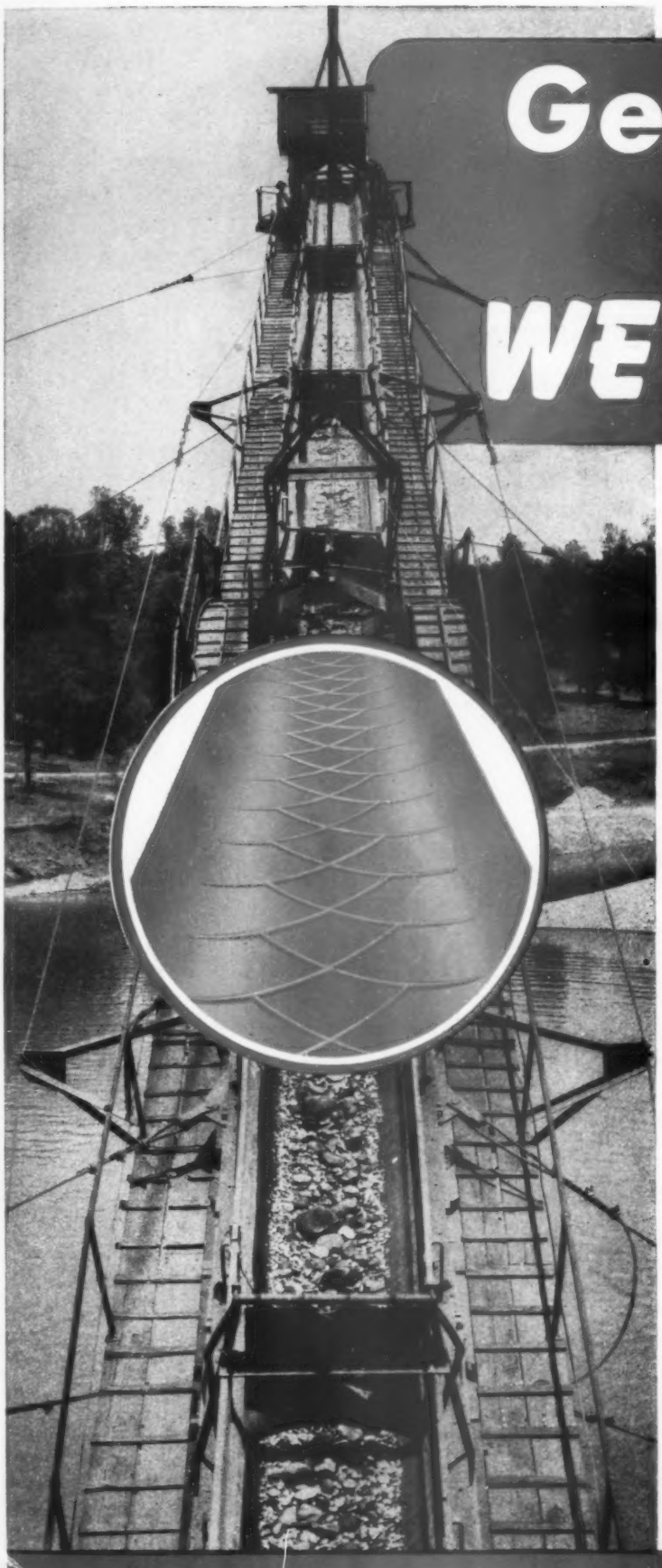
A
Heat Exchangers for Dry Kilns

B
Chain Systems for Wet Kilns

C
Unax Cooler Integral with Rotary Kiln

F. L. SMIDTH & CO.

60 EAST 42ND STREET — ENGINEERS AND MACHINERY MANUFACTURERS — NEW YORK, N. Y.



Get a grip on WET LOADS

LIGHTNING
Ribbed Conveyor Belts
PREVENT LOAD SLIPPAGE

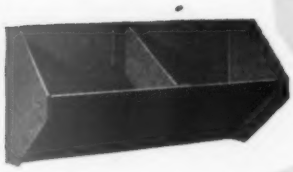
A slipping load greatly shortens the life of a conveyor belt . . . just as a tire wears faster when the wheel is out of alignment. Slowly, but surely, this added abrasion wears the surface away. So, for longer belt life . . . prevent slippage.

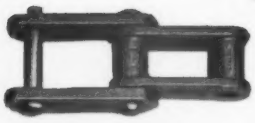
Lightning Conveyor Belts have a patented raised "tread" that grips wet rocks and rubble and holds the load tight. That's why you will find them on so many gold dredges such as the Yuba dredge pictured here.

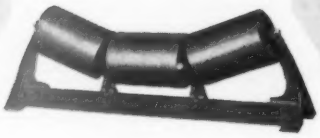
Whenever you have a wet load or difficult delivery situation, you'll find Lightning Conveyor Belt unequalled for the job. In fact, no matter what your conveying problem may be—wet or dry load—there's an American Rubber Conveying Belt engineered to fit the job.

Typical dredge-stacker belt showing wet gravel load on a Yuba dredge operating in a California placer gold field. Inset: Detail of patented Lightning Conveyor Belt . . . the belt with the "tread" that grips and holds the load, wet or dry.

The AMERICAN RUBBER Mfg. Co.
OAKLAND, CALIFORNIA
ALSO MAKERS OF IMPERIAL, AMERICAN, MUNICIPAL AND TIGER FIRE HOSE







For Star Performance

JEFFREY REPLACEMENT PARTS

Long years of research are behind each individual part that goes into Jeffrey equipment.

When replacement does become necessary, it's common sense to insist on parts made to the same high standards as the original equipment.

Genuine Jeffrey replacement parts can cut down installation time, insure continued smooth performance. Specify Jeffrey.

THE JEFFREY MANUFACTURING COMPANY

919-99 North Fourth St., Columbus 16, Ohio

ESTABLISHED 1877

Baltimore 1	Buffalo 2	Cleveland 13	Harlan	Milwaukee 11	Pittsburgh 22
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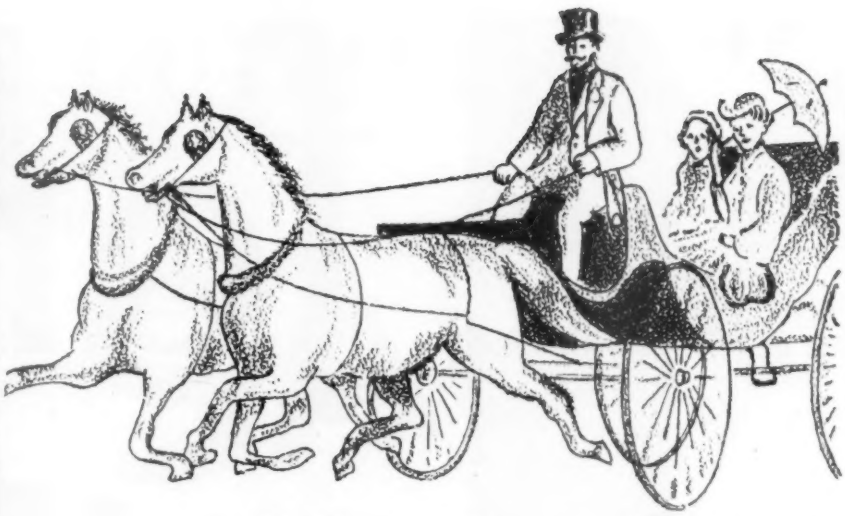
Boston 16	Cincinnati 2	Detroit 13	Huntington 19	Philadelphia 3	Salt Lake City 1
					Scranton 3

Wood's V-BELT DRIVES



...a Matched Team

FOR TRANSMITTING POWER WITH MINIMUM LOSS

WOOD'S sheaves and V-Belts pull together and work together because they are *engineered* to do just that. Designed with the proper groove contour to permit complete belt contact and uniform seating, Wood's V-Belt drives transmit energy from its source to the driven machinery with maximum efficiency.

When grandfather's spanking bays trotted smartly down the turnpike, Wood's products were already in use. They have stood the test of time. Since 1857 this complete line of transmission equipment, skillfully designed and efficiently manufactured, has earned a reputation for excellence.

Wood's V-Belt drives, backed by Wood's experience, and gauged both by built-in quality and reliable performance, represent outstanding value in the field.

Wood's V-Belt drives and other products of Wood's manufacture will serve you faithfully in the post war era. Plan for post war now. Engineering consultation welcomed. Details furnished upon request—or see your conveniently located Wood's dealer.

EVERYTHING IN TRANSMISSION

Bearings—Collars—Clutches—Couplings—Contactors —Hangers—Pillow Blocks—Pulleys—V-Belt Sheaves and Complete Drives

T. B. WOOD'S SONS COMPANY, CHAMBERSBURG, PENNA.

Branches: Boston, Mass. Newark, N. J. Pittsburgh, Pa. Cleveland, Ohio Detroit, Mich. Houston, Texas

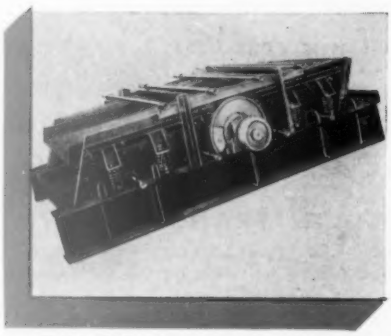
"1 for all"

KENNEDY-

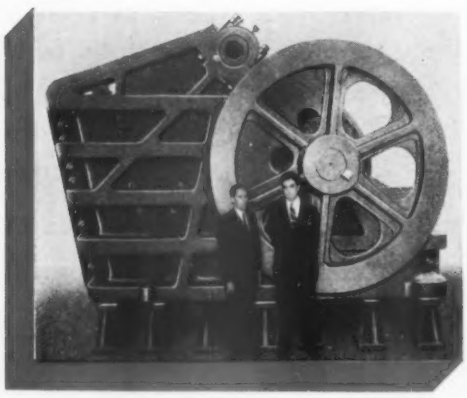
War-time producers of crushed stone and allied materials must master the problem of expanding production schedules and diminishing machinery replacements.

The fully modernized plant, equipped *throughout* with KENNEDY-VAN SAUN processing and handling equipment, fully meets this emergency by combining record output with lowest machine "down-time".

For "unconditional economy" in crushing, pulverizing, washing, screening, and conveying non-metallic minerals, these KVS units—finely engineered and durably constructed—are the first requirement of efficient plant operators.



KVS Vibrating Screens give about 95% sizing efficiency. Low installation and maintenance costs. Available in three types, and many sizes.



KVS Swing Jaw Crushers can stand the severest crushing strains. Furnished in sizes to meet any tonnage or feed demands.

Write for Bulletins

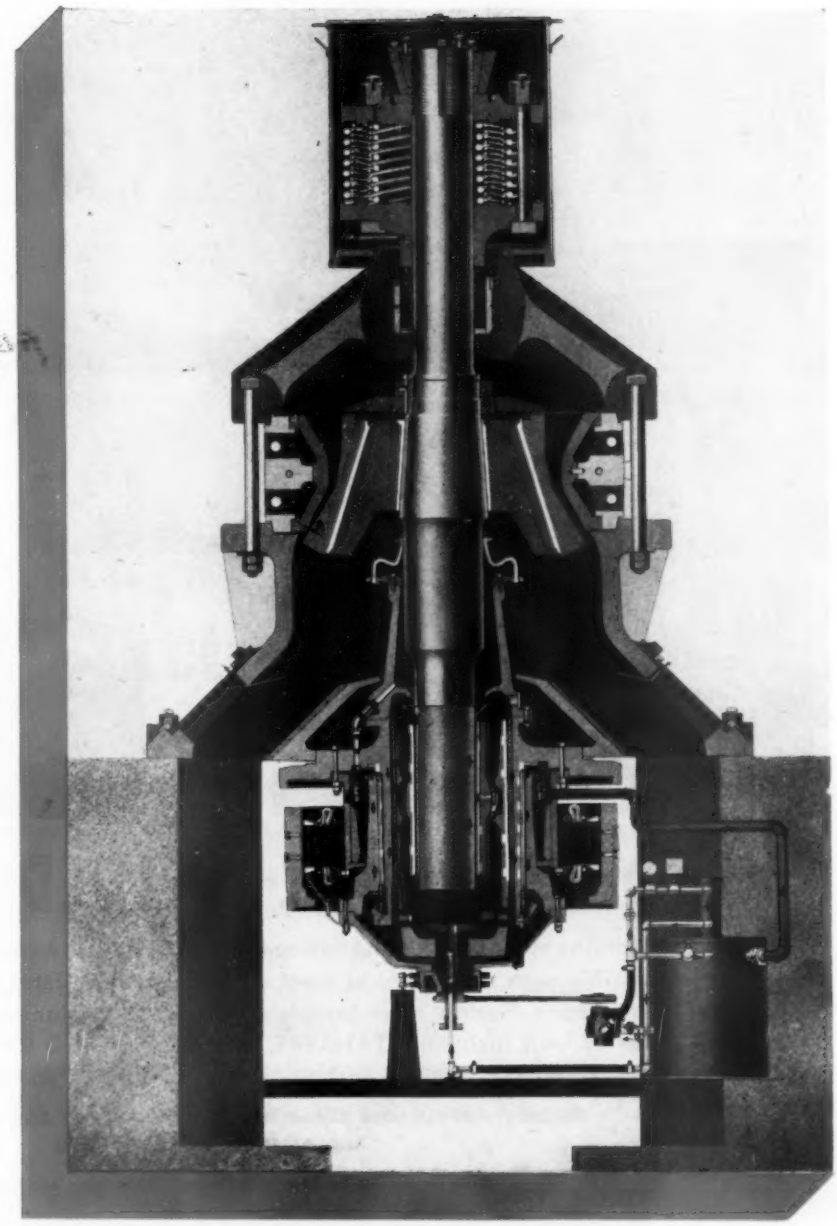
KVS Gyratory Gearless Short Sha Standard Crusher for primary r duction with synchronous mot built in the pulley, giving highe efficiency.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

"COMPLETE OUTFITTERS"

to operators of Sand, Gravel and Crushed Stone Plants

VAN SAUN



KENNEDY Ball Bearing Gearless Crusher,

. . . low head type, for fine crushing.

Here is a machine that will do *more* work than any geared crusher, and with *less* cost for operation, maintenance and repairs.

Synchronous motor built-in pulley saves power by applying all of it directly to crushing.

Other features include reversible concaves or grinding ring which gives double the wear of wearing surfaces than can be found in any other crusher, forced feed lubrication, easy accessibility, quick adjustment of crusher opening.

Ask about our famous

No. 49½ Model

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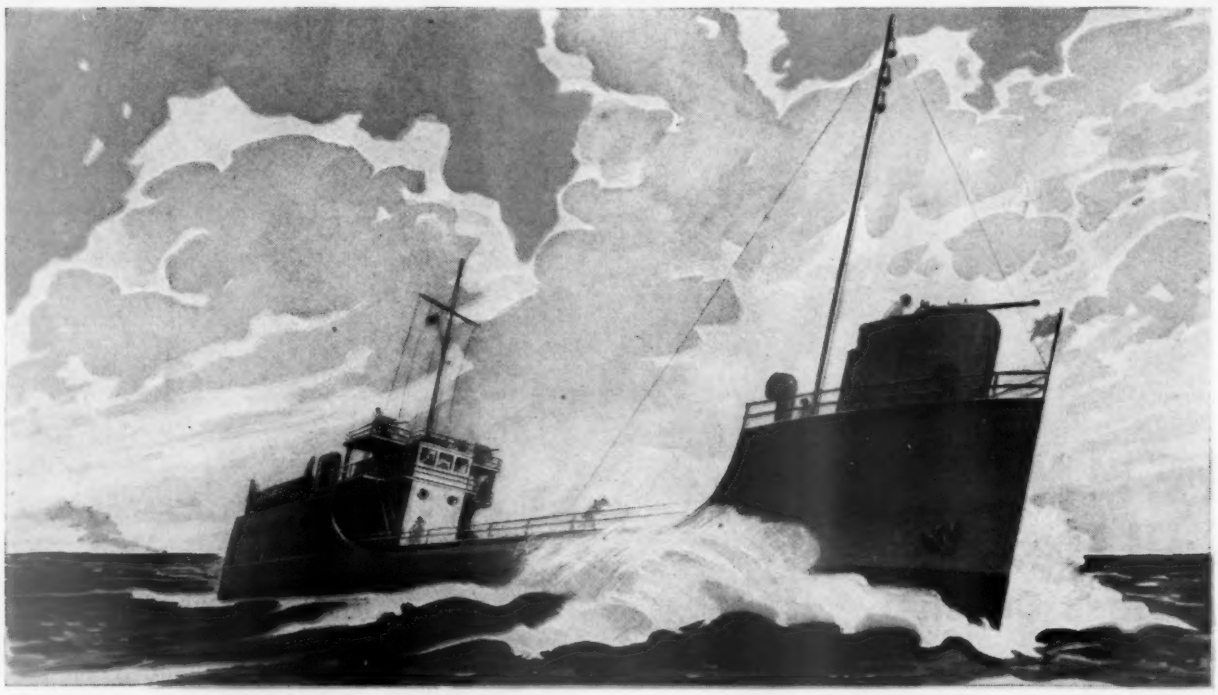
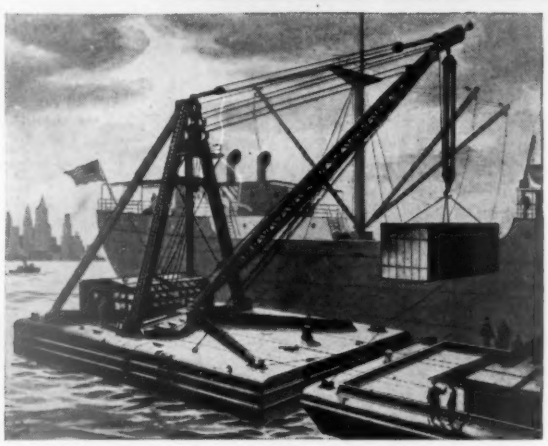
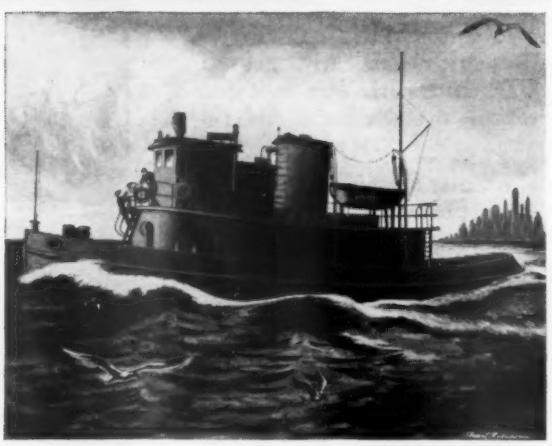
Odenbach







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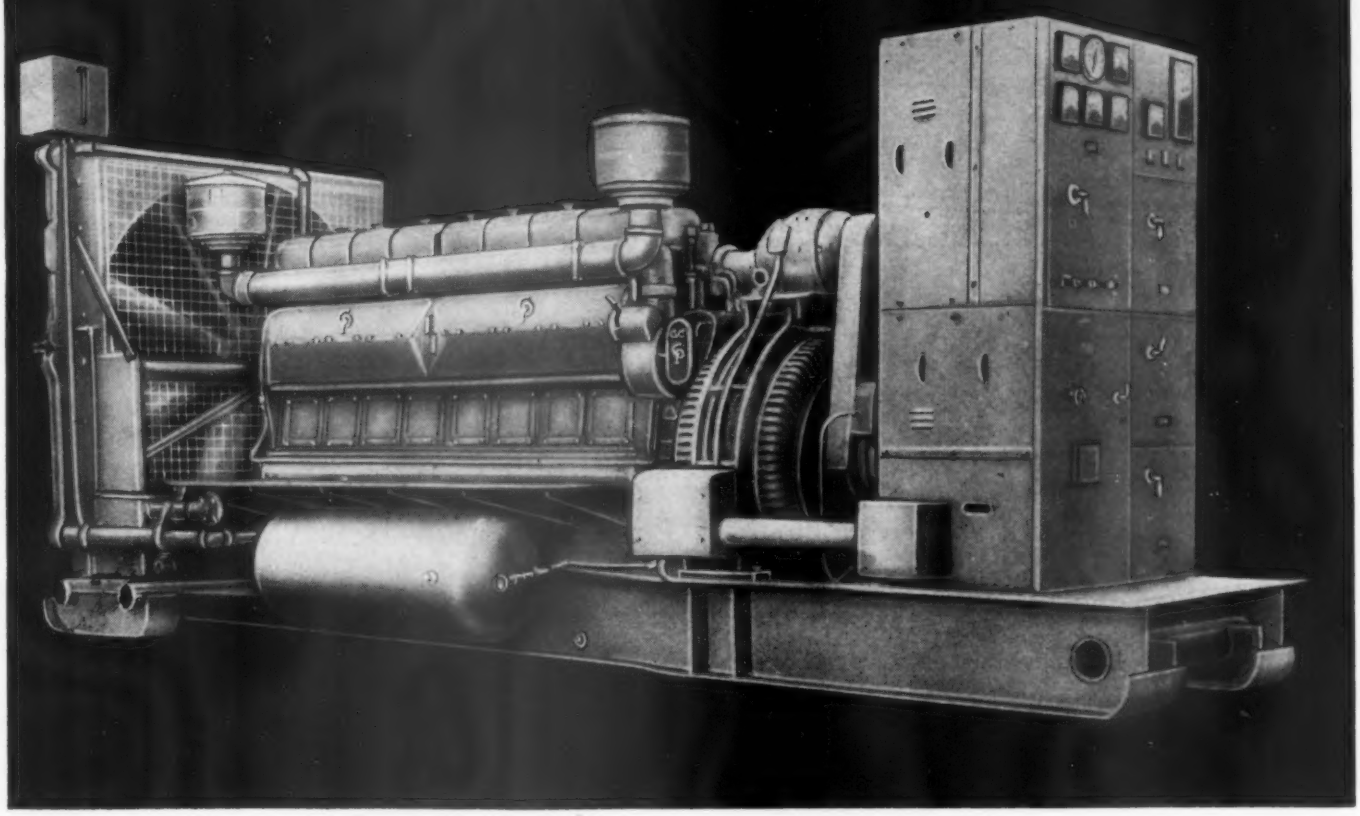
Odenbach maintains one of the largest "all-enclosed" shipyards in the world which makes year 'round production possible with the ability to meet definite delivery dates. Shipyards located in Rochester, N. Y. and Miami Beach, Florida, have complete facilities for designing and building both standard and "special" types of craft including: TANKERS, SELF-UNLOADING CARGO SHIPS, HOPPER and DECK BARGES, TUGS, DREDGES, SCOWS and other types of HEAVY MARINE EQUIPMENT.

SPECIALISTS IN BUILDING BARGE SECTIONS ADAPTED TO RAIL TRANSPORTATION AND ASSEMBLY AT DESTINATION

Write for Information Regarding Designs, Shipbuilding, and Conversions

ODENBACH HOLDING CORPORATION
ROCHESTER 4, N. Y.

Semi-Portable Ready for Instant Use



CP Diesel Electric Power Unit

READILY portable, CP Diesel Electric Power Units are furnished complete with all accessories — intake filter, exhaust silencer, starting air equipment, oil and water cooling equipment, switchboard, voltage regulator and wiring. Upon arrival at location and with minimum support these fully assembled CP Power Units are ready for immediate use.

Built in 100, 175 and 260 kw sizes, for any voltage and current characteristics, CP Diesel Electric Power Units are designed so that, where larger amounts of power are required, two or more CP units can be readily paralleled in multiple unit application. They are ideal for application in the petroleum, utility, contracting, mining and other fields where quick installations are essential. Write today for data on CP Diesel Electric Power Unit.

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AIR COMPRESSORS
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DIESEL ENGINES
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Long Life Liners for Streamliners

Sleek, powerful and modern are the Streamliners as they go streaking through the country on fast schedules and with heavy loads. Their rugged Diesel engines take terrific punishment and take it ably.

Yet there is a spot in these sturdy engines that is vulnerable to wear . . . the cylinder liners. Or rather, the liners are vulnerable to wear *unless they are long life liners treated with* PORUS-KROME . . . as many Diesel engine liners are.

That is why one large manufacturer of Diesel engines for Streamliners and other applications has standardized on PORUS-KROME liners for all engines coming off the production line. And that is why other engine manufacturers are planning to use PORUS-KROME in their engines as soon as they can again build engines for civilian use. It enables them to offer their customers engines of greater reliability and longer life . . . and lower maintenance costs.

And what is PORUS-KROME?

PORUS-KROME is hard, pure chromium which is applied to cylinder bores by the patented Van der Horst process. It has tiny pores and channels in its surface which serve as reservoirs for lubricating oil, feeding it back to the surface as needed. It reduces corrosion and wear and multiplies cylinder life 4 to 20 times, and ring life 3 to 4 times.

Be sure the engines you buy have the greater reliability and lower maintenance costs which are assured by PORUS-KROME. Write today for detailed description of PORUS-KROME and its advantages in gasoline and Diesel engines which are given hard use in commercial and industrial service.

PORUS - KROME

Good for the Life of your Engines

VAN DER HORST

U.S. PATENTS 2,048,578 AND 2,314,604

VAN DER HORST CORPORATION OF AMERICA

AN AFFILIATE OF DRESSER INDUSTRIES

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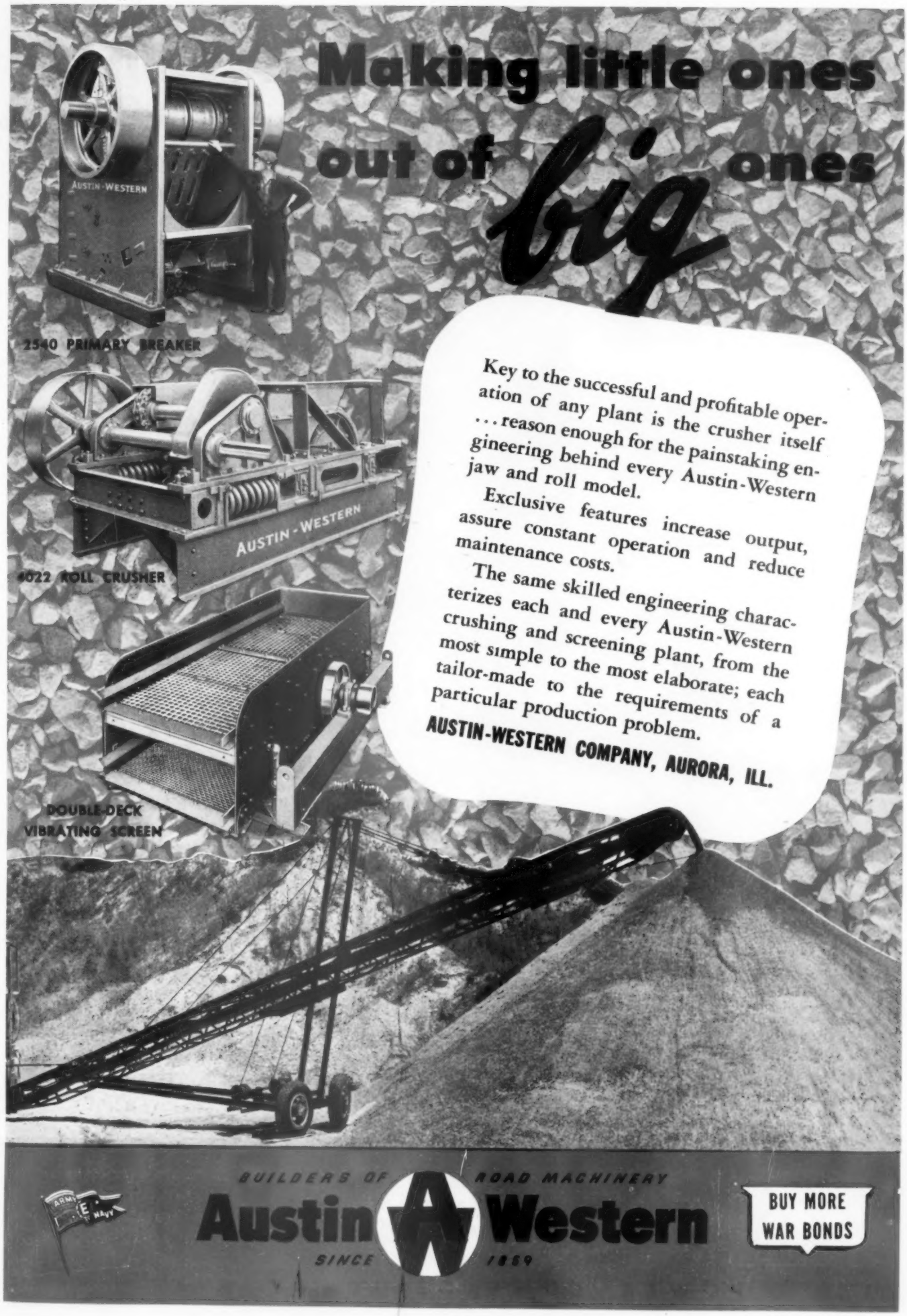
Making little ones
out of big ones
AUSTIN-WESTERN
2540 PRIMARY BREAKER
AUSTIN-WESTERN
4022 ROLL CRUSHER
DOUBLE-DECK
VIBRATING SCREEN
Key to the successful and profitable operation of any plant is the crusher itself ... reason enough for the painstaking engineering behind every Austin-Western jaw and roll model.
Exclusive features increase output, assure constant operation and reduce maintenance costs.
The same skilled engineering characterizes each and every Austin-Western crushing and screening plant, from the most simple to the most elaborate; each tailor-made to the requirements of a particular production problem.
AUSTIN-WESTERN COMPANY, AURORA, ILL.
BUILDERS OF ROAD MACHINERY
Austin Western
SINCE 1859
BUY MORE WAR BONDS

Cut Material-handling Costs *with this NEW CLUTCH*

Shovels, cranes, hoists and draglines, equipped with the Fawick Airflex Clutch, are more dependable, more productive machines. They are free from the troubles of conventional clutches, with their resulting idle time and added costs.

The FAWICK Airflex Clutch

...saves TIME, space, maintenance and repairs. It has no arms, toggles or springs—needs no lubrication or adjustments—controls power and torque by air—absorbs shocks and vibration.

Proved by the Navy under battle conditions and on heavy-duty drives throughout industry.

Fawick Engineering Department will gladly give you recommendations and further details.

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9919 Clinton Rd. · Cleveland 11, Ohio

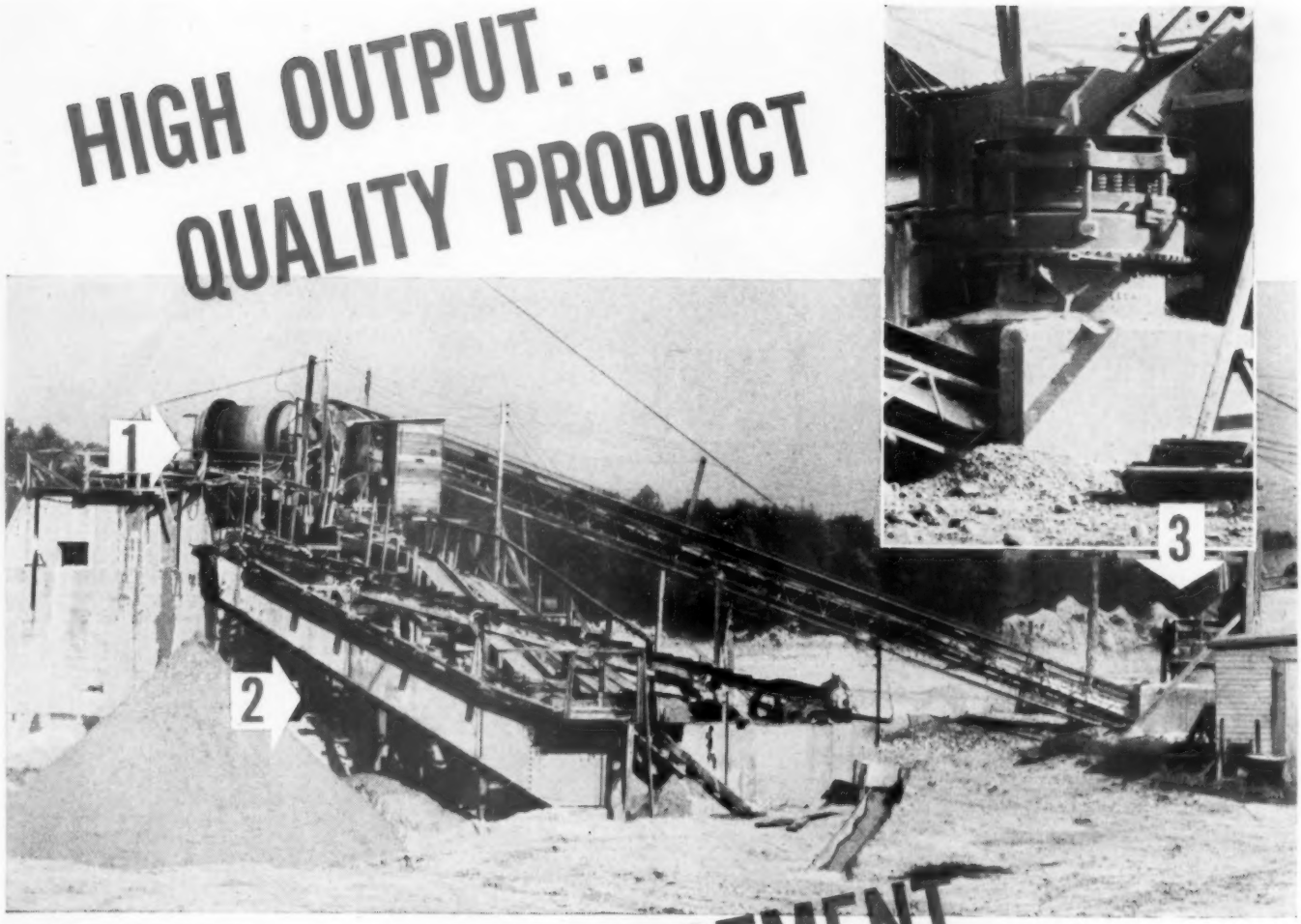
In Canada, **Renold-Coventry Ltd., Montreal, Toronto, Vancouver**

In Britain, **Crofts Engineers, Ltd., Bradford, England**

FAWICK *Airflex* CLUTCH

POWER CONTROLLED BY AIR

HIGH OUTPUT... QUALITY PRODUCT



1 Telsmith Super Scrubber
2 Telsmith Sand Drag
3 Telsmith Gyrasphere Crusher

LOW INVESTMENT

G-13

● Right from the start the Northern Virginia Construction Co. has been getting consistently high output from its Annandale, Va. plant. And the exceptionally clean and well graded sand and gravel this modern 100 to 125 ton-per-hour plant produces, finds a ready and profitable market. All its major equipment is Telsmith.

With the occasional 5″ boulders scalped out, other material over top finished size goes to the 36″ Telsmith Gyrasphere Crusher. Working at choke feed this unit turns out top tonnage with less power and less upkeep. The Telsmith 60″ Super Scrubber . . . a high-speed ball mill type scrubber . . . processes thoroughly and separates sand and gravel. A No. 6 Telsmith Sand Tank makes concrete sand. Overflow flumed to a 60″ x 30′ Telsmith Sand Drag produces mason sand. This plant also has a 24″ x 5′ Telsmith Plate Feeder; 24″ x 45′ and 24″ x 90′ Telsmith B-G Conveyors.

In this well-balanced plant Telsmith capacity, flexibility and economy combine with low investment cost to produce a good margin of profit. That's why this operator's other two plants have Telsmith equipment. *Get Bulletin G-15.*

TELSMITH

SMITH ENGINEERING WORKS, 504 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London

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North Carolina Eqpt. Co. Raleigh & Charlotte 1, N.C.
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power...
for crushing rock

The demand for "tomorrow's engine today" calls for more horsepower per pound and per inch.

There are different ways of increasing the power of an engine—by speeding it up, by increasing combustion pressures . . . but BUDA achieves this goal through *greater piston displacement* with no greater weight or size. Longer life is assured through the low pressure Lanova combustion principle.

This, like all BUDA improvements, is born of long and wide experience—through 64 successful years of making better equipment to do a better job.

BUDA engines are now available for essential industries. Write or wire today for complete information.

BUDA Nozzle Testers

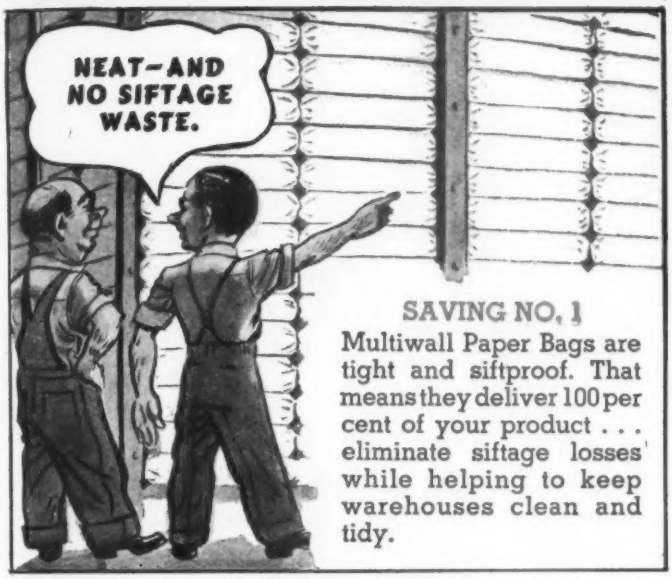
BUDA

15426 Commercial Avenue
HARVEY (Chicago Suburb) **ILLINOIS**

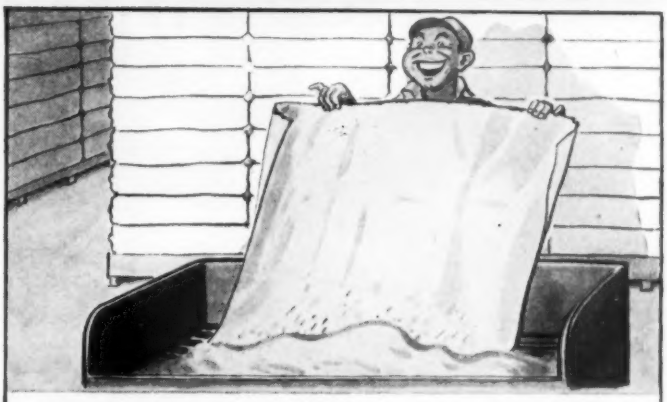
BUDA
"All Purpose Jacks"

Check these Savings

AGAINST YOUR PRESENT PACKAGING METHOD



SAVING NO. 1
Multiwall Paper Bags are tight and siftproof. That means they deliver 100 per cent of your product . . . eliminate siftage losses while helping to keep warehouses clean and tidy.



SAVING NO. 2.—Multiwalls save materials! This is because materials do not readily cling to the smooth interior surfaces of Multiwall bags. These bags empty clean, thus cutting retention losses.

SAVING NO. 3—Multiwalls prevent losses caused by contamination. Your product flows directly to the bag packing machine where the bags are filled and weighed automatically. Tight, strong Multiwalls repel dampness, dust, insects, and contaminating gases.

SAVING NO. 4—Multiwalls help conserve manpower and thus reduce labor costs. Experiments have shown that *one man* can load and stack Multiwall Paper Bags as fast as *two men* can handle comparable tonnage in heavy fabric sacks or drums.

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PIT AND QUARRY

APRIL, 1945

Vol. 37 No. 10

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EDITORIAL

Economic Power After the War

FEW thoughtful observers of current economic and political events can fail to believe that the end of the war will open the way for an intensification of the struggle for economic power among those who have been contending for supremacy in that field. Violent dissatisfaction with the "Little Steel formula," particularly as exhibited by the A. F. of L, the C. I. O. and the U. M. W.; complaint against the growing political power of labor unions expressed by organizations of business men and the heads of individual enterprises; increasing grumbling on the part of unorganized business men and workers—all these characteristics of the present period certainly point to a more bitter and persistent struggle between those opposed elements in our economic life after the war, when the sense of patriotic duty in concerted action against a foreign foe will have subsided and domestic problems will claim and receive more of our attention. It may be that the skirmishes and contests of the war era are but a foretaste of the testing of strength that is to come, for there are people who would welcome what they call a "showdown," a "once-for-all" decision as to who shall control the economic life of the nation. Pressure groups serving special interests may be even more active and successful in peace, and democracy may suffer badly in the conflict.

Unless we misinterpret the evidence, more and more members of these groups seem to be leaning in the direction of coöperation and compromise, believing, no doubt, that more is to be won in the way of long-term gains by conciliation. Nevertheless, there is still great diversity of opinion, even among the more intelligent spokesmen for these groups, as to what constitutes the right approach to the problem, there being in too many cases less willingness to relinquish present rights or privileges than to seek their perpetuation under different names.

Beardsley Ruml of "pay-as-you-go" fame has lately expressed his strong conviction that private enterprise alone can work out plans for the discharge of its economic responsibilities to society and that it does not need aid, encouragement or advice from government, labor or consumer groups. He has said that business is only one of many rule-making and power-wielding agencies that impose their weight and strength on our economic system. He recognizes the fact that it is organized so as to perpetuate itself through powers exercised by a few who seek chiefly to control values and savings, but says that it nevertheless "provides people with purposeful activity . . . giving order, sequence and significance to the activities of the day . . . and a wide range of choice of the kind of life they want to lead." In his belief that the modern corporation could be made to operate more democratically than it does he represents the attitude of the more enlightened modern business man, yet his position with regard to labor organizations and the union shop might not be acceptable to many managements which have improved their employer-employee relations through coöperative action.

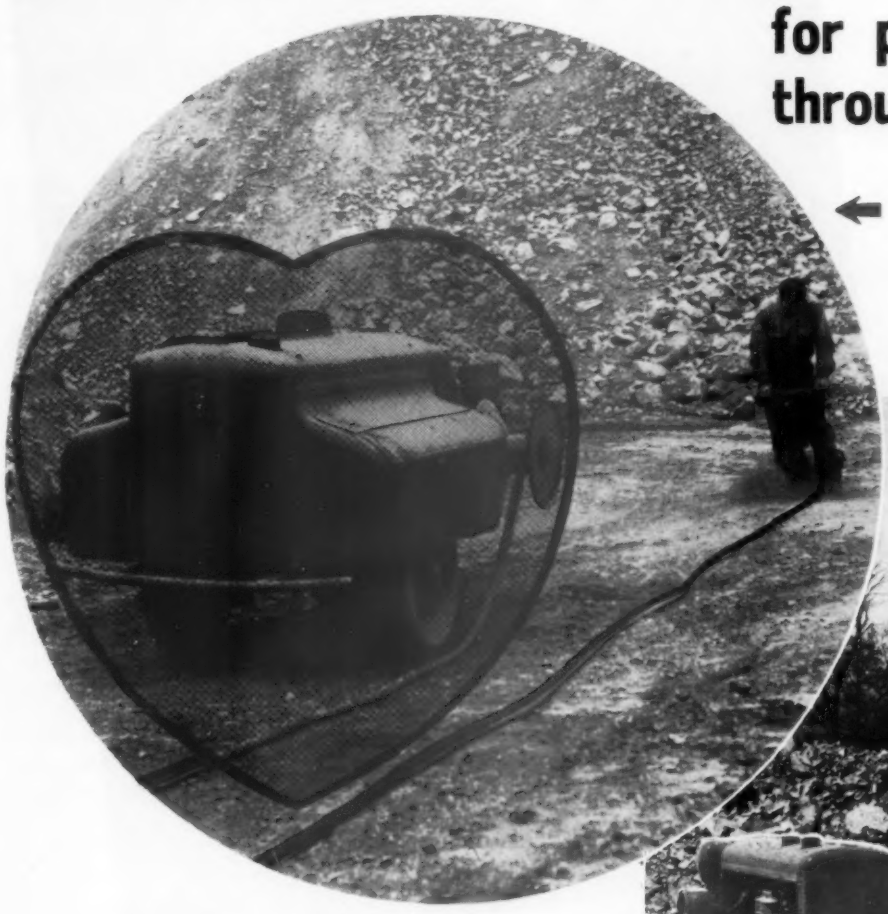
Professor John M. Clark, who recently made an academic study of the problems of relinquishing wartime government controls over business for the Committee for Economic Development, has drawn attention to the many ways in which we might easily err in making that change. He sees the problem as one of shifting back to the "automatic market system in which supply and demand determine prices"—a return to pre-war "normalcy." He seems to fear increasing control by large corporations through the acquisition of what will, by the end of the war, prove to be surplus materials and production facilities. He sees our employment problem in terms of providing remunerative work for 8,000,000 or 9,000,000 more workers than were employed in the last pre-war year, 1940, and to accomplish that we must have a national income at least 40 per cent. greater. If unemployment should occur while industry is refitting itself for the production of peacetime goods, he says industry should not be held responsible—an obvious truth—but it should be allowed to exercise economic authority, without government aid or interference, as it is better qualified to impose economic regulation than any other group.

IF business, labor, agricultural and other pressure groups should intensify their activities and increase their demands after the war, there will not be much reason to look for an intelligent or fair adjustment of our economic machinery. In the past when they have not been able to gain an advantage for themselves, they have sought the abolition of some privilege theretofore enjoyed by a competitive group. It is difficult to see how an economy, which will properly weigh, adjust and reconcile the conflicting interests of different sections of our economic organization, can ever be worked out if concessions continue to be made to those who cry the loudest or press the hardest irrespective of their separate contributions to the general welfare and while large sections of the population are barred from economic advantages and opportunity because of the lack of a belligerent and selfish lobbying agent.

Because of their qualifications, experience and big stake in the future of this nation, business men should not view lightly the threat to profitable business and economic stability that lies in the purposes and obvious objectives of pressure groups of all kinds. They, as well as the nation as a whole, have much more to hope for in a democratic, rather than in an autocratic or oligarchic, control of economic power after the war.

HEART of the JOB

for pumping vital air through the power lines



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Two SCHRAMM Compressors of 315 cu. feet per minute of actual air delivery driven by diesel engines and operating wagon drills in a quarry.

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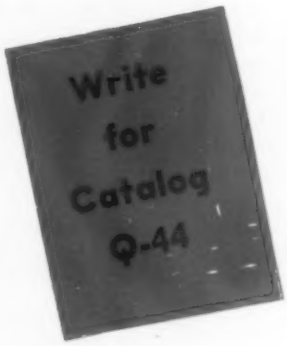

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SCHRAMM units show better production-and-profit records because "SCHRAMM builds 'em better!"

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Buell's assurance of HIGH EFFICIENCY, LOW MAINTENANCE, LONG LIFE

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NO MOVING PARTS
FREE DUST FLOW

PRODUCE

HIGH EFFICIENCY
LOW MAINTENANCE
LOW OPERATING COST
LONG LIFE
NO CLOGGING

Convincing facts about the "Shave-off" may be found in Buell's bulletin—
"The van Tongeren System of Industrial Dust Recovery".

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DESIGNED TO DO A JOB, NOT JUST TO MEET A "SPEC"

Fluorspar Output Slowed by Floods in Rosiclare Area

The Ohio River's latest rampage has put a serious crimp in the production of war-vital fluorspar in the Rosiclare, Illinois, district. A recent survey of the producing companies has revealed that the mines of the Aluminum Ore Company, the Hillside Flourspar Mines, and the Rosiclare Lead & Fluorspar Mining Company all have been inundated in the most severe flood since 1937's flood to end all floods.

Although the flood waters caused comparatively little serious damage to the fluorspar plants themselves, it will require many weeks of costly pumping to dewater the flooded mines.

The production of fluorspar has continued almost without interruption at the Minerva Oil Company's and the Crystal Fluorspar Company's mines and plants, which are located on higher ground at Cave In Rock, some 20 miles northeast of Rosiclare. The Mahoning Mining Company's mine, which is also located at Cave In Rock, was not affected by the flood, but operations have been suspended temporarily at the concentrating plant in Rosiclare.

George T. Horton Dies as Result of Accident

George T. Horton, president of the Chicago Bridge & Iron Company, died March 19 in Chicago of injuries received in an automobile accident.

Mr. Horton, a retired lieutenant commander in the navy, was a member of the American Society of Civil Engineers, the Western Society of Engineers, the American Society for Testing Materials, and the Society for Naval Architects and Marine Engineers. He also was a life trustee of Renesselaer Institute. Mr. Horton became associated with the Chicago Bridge and Iron Company, founded by his father, Horace E. Horton, in 1893 and had been its president since 1912.

Death Takes S. E. Willey, Head of Sand-Gravel Firm

Stephen E. Willey, owner and operator of the Willey-Ruckstul Company of Miamitown, Ohio, died at Christ Hospital, Cincinnati, February 24.

Mr. Willey had been in the sand-and-gravel business since 1903 and

Stephen E. Willey

was one of the best-known producers in the state. His knowledge of the sand-gravel industry was proverbial, and he often was consulted by other firms in this field. He built several producing plants but never used a blueprint for any of them.

In the March issue of PIT AND QUARRY a story of the newly formed National Agricultural Association, Incorporated, and the names of its directors was published to which has been added N. K. Dickerson, Jr., of Limestone Products, Incorporated, Monroe, North Carolina.

Ohio's Highways in Need of Repairs Says State Director

Ohio must look to postwar days for extensive repairs to state highways, Perry T. Ford, Ohio highway director, recently disclosed.

He termed the state's billion dollar highway system was in the worst condition in history as a result of the manpower shortage and depleted revenues.

Mr. Ford declared that "after the war" it will be necessary to spend $40,000,000 a year on highway improvements in the state, including Federal and state money. He asserted that the chief concern now is to maintain the roads in the best possible condition.

"Roads are in bad shape," he said, "because the State Highway Department's revenue has been cut by gasoline rationing; roads have been overloaded with heavy traffic and insufficient men have been available to maintain road repair."

Wage Boosts Denied to Quarry Workers

Sand, gravel and rock employees in Los Angeles, Orange and San Bernardino Counties of southern California were denied pay increases of from 10 to 20 cents per hour in a decision handed down by the Tenth Regional War Labor Board on March 3. Apprentices were granted a 10 cent increase, however.

The dispute was between 10 producing companies and the International Association of Machinists, Local 1186, A. F. of L.

Approximately 85 per cent. of the workers were involved in the controversy. Apprenticeship scales start at 75 cents an hour for the first year and run to $1.05 an hour for fourth-year men under the new schedule.

Odenbach Ship-Building Companies Open New Offices

John H. Odenbach, president of the Odenbach Holding Corporation, owners of the Odenbach Shipbuilding Corporation of Rochester, New

John H. Odenbach

York, and the Florida Shipbuilding Corporation of Miami Beach, Florida, recently established new offices at 21 West Street, which is strategically situated in the center of New York's major shipping activities.

The Odenbach Holding Corporation will co-ordinate future sales activities of their properties and take the initiative in exploiting and developing domestic and foreign markets for new construction of all-welded steel vessels. Alfred E. Sedgwick, widely known in the marine industry for the past 25 years, invites shipping interests to consult with him, particularly on their requirements of new all-welded steel vessels for use in transporting wet or dry cargoes.

Mr. Odenbach is widely known among sand-and-gravel and crushed stone producers as the president of the Dolomite Products Company, Inc., Rochester, New York. He has for many years been active in the affairs of the national associations of these industries.

Cedar Bluff Quarries Sold by W. C. Sparks

W. C. Sparks, owner of the Cedar Bluff Quarries near Princeton, Ken tucky, announced that, effective March 1, he would liquidate the business he had operated since 1929. An option on the properties was taken by Stanley T. Stokes, R. S. Wilson, James R. Breeden, W. B. Stone, and Russel R. Smith, all of Madisonville, Kentucky. The quarries, which have a capacity of 150 tons per hour, have long supplied the Princeton area with agricultural limestone and all types of rock.

Mr. Sparks will devote his entire time to his agricultural interests.

Camm Appointed Manager of Universal Atlas Plant

The appointment of John P. Camm as plant manager of the Osborn, Ohio, plant of the Universal Atlas Cement Company, a United States Steel Corporation subsidiary, was announced by Louis M. Funderburg, general operating manager. The Osborn plant was recently acquired by Universal Atlas by purchase from the Wabash Portland Cement Company.

Mr. Camm has been plant manager of the Leeds, Alabama, plant since 1942. He joined the company in 1925 as a draftsman at the Northampton, Pennsylvania, plant, and was assistant foreman, foreman, and quarry superintendent of the company's gypsum operation at Watonga, Oklahoma, from 1926 to 1936, when he transferred to Leeds as assistant superintendent of the plant. He is a graduate of Lehigh

J. P. Camm

University and holds the degree of Engineer of Mining.

W. O. Lawrence, assistant plant manager at Leeds, was appointed acting plant manager there. He joined the company in 1933 at Leeds and served as operator in the burning department, laboratory technician, clerk in operating and construction departments, and draftsman before spending two years at the New York Office as a field engineer.

New Book Tells Story of Universal-Atlas and Cement

A recent important contribution to the growing volume of literature on the Portland cement industry is *The Magic Powder* by Earl J. Hadley.[1] In this book, Mr. Hadley, a veteran newspaper, magazine, and syndicate writer, presents in a more popular vein much interesting information on this industry which had been available only in a more technical form. In a newsy style this book tells the story of the cement industry through the vehicle of the Universal Atlas Cement Company, the largest manufacturer of cement in this country. It translates scientific, structural and marketing achievements of cement and concrete into terms of men, struggles and aspirations.

Dealing as it does primarily with the activities of the Universal Atlas Cement Company, a combination of the former Atlas Portland Cement Company and the Universal Portland Cement Company, and their predecessors, this book is necessarily incomplete as a history of the entire industry. It does, however, present much interesting information never before published. Historically it goes back to the use of cement in ancient days and traces the development of Portland cement and various special types including the air-entraining cements for which there is a rapidly-growing demand. Biographically it is replete with the names and achievements of the men responsible for the development and growth of the industry and particularly those connected with the above companies who contributed and are contributing materially to this progress.

For the technically-minded *The Magic Powder* provides a wealth of information on the development of new types of machinery and products. Much of the technical detail is presented in a supplement in the back of the book where it will not detract from the readability of the main section for the average reader. For all readers it presents in readable and interesting form many anecdotes and sidelights on some of our leading industrialists and one of our most important basic industries.

[1](*The Magic Powder; History of the Universal Atlas Cement Company and the Cement Industry*. By Earl J. Hadley. 382 pages. 90 illustrations. G. P. Putnam's Sons, New York, 1945. $3.50.)

The Allen Codell Company, Winchester, Kentucky, has purchased the Caldwell quarry near Boonsboro.

Burton Ford Joins Staff of Thomas Phillips Co. as General Manager

Burton Ford, sales manager of the Valve Bag Division of St. Regis Paper Company since April, 1928, has resigned his post to become a director and general manager of the Thomas Phillips Company, Akron,

Burton Ford

Ohio, manufacturers of paper and paper bags for flour, lime, and cement.

Widely known in the lime, fertilizer and chemical industries, Mr. Ford is long-experienced in all phases of the paper shipping sack industry. He is a consultant to the Paper Division of the W.P.B., and a director of the Phoenix Supplies Company of Cleveland and the International Purchasing Company, Boston.

Following his early work in the fertilizer industry, Mr. Ford served as division manager of the Virginia-Carolina Chemical Corporation, Alexandria, Virginia, from 1920 to 1922. He was secretary and general manager of the National Lime Association from 1922 to 1926. Prior to joining the St. Regis organization in 1928, he directed his own organization.

Coplay Cement Honored by Army-Navy "E" Award

The Coplay Cement Manufacturing Company, Coplay, Pennsylvania, recently received the Army-Navy "E" award at a ceremony attended by officials of the company, employees and military spokesmen.

The address of welcome was made by Max E. Grunewald, president of the company. George M. Koch, president of the Dienalt and Eisenhardt Co. of Philadelphia, served as master of ceremonies. D. J. Uhle, vice president of the cement company, accepted the award.

For the past two and a half years since it converted a part of its facilities for war production, the company has been producing various types of munitions with marked success.

The company, America's oldest cement company, was founded in 1866 by David A. Saylor and began the manufacture of the only portland cement then produced in the United States. The heads of the company at the very outbreak of the war pioneered in the conversion of the large machine shops for war production. The result has been the receipt of the highest honor the government can bestow on an industrial organization.

Joplin Firm's New Owners to Retain Company Name

The Independent Gravel Company, Joplin, Missouri, has been purchased by Guy H. Waring, Robert D. and Earl C. Tontz. Both the policies and name of the old Independent will be retained. Officers of the new company are: Guy H. Waring, president; Robert D. Tontz, vice president and general manager; Georgia S. Waring, treasurer; Earl C. Tontz, general sales manager and secretary. Mr. Waring is also owner of the Oronogo Mutual Mining Company, Oronogo, Missouri.

N.L.A. Sponsors Research of Farm Liming Problems

The relation of lime to high acre yields of most crops is so important the National Lime Association believes, that it recently instituted a new agricultural research program. The basic purpose of the program, it is stated, is to aid farmers in the study of related liming problems and to a practical knowledge of results to be obtained by the use of products the lime industry has to offer.

For that reason it has decided to finance a five-year research program in cooperation with the Soils Department of the New Jersey Agricultural Experiment Station at Rutgers University to be gotten under way by July 1, 1945. One year later the program will be expanded to include experiment stations in New York, Pennsylvania, Ohio and Maryland, and arrangements are now being made for the granting of graduate fellowships leading to the Ph.D. degree in all these states.

An Advisory Committee of the Association will meet from time to time with representatives of the five agricultural experiment stations to help decide upon the program of work and to keep in touch with developments. The first of these meetings will be at Rutgers University on June 6, 1945.

Raoul Descalzi of Chile Completes Study in U. S.

Raoul Descalzi, a member of the Cemento "El Melon" organization of La Calera, Chile, one of the largest cement producers in South America, who has been in this country for some time studying cement production methods, is returning to Chile soon. He has been especially interested in studying the precipitation of stack dust with Cottrell electrical precipitation and has also spent much of his time at the General Electric company's laboratories and in visiting various cement plants. Mr. Descalzi first came here in 1942 when, as an assistant in the electrical

Raoul Descalzi

department at La Calera, he was awarded a scholarship to do graduate work in electrical engineering at the University of Iowa.

The El Melon organization apparently is one of the most progressive in the business and is preparing to meet the growing road-building and other construction demands in Chile. The company also operates a coal mine, a hydro-electric power plant with a Diesel stand-by unit, and makes phosphates for agricultural purposes.

Transfer of the properties and business of Texas Cement Plaster Company in Plasterco and Longworth, Texas, from S. M. Gloyd, owner, to the Celotex Corporation was announced recently. Texas Cement Plaster Company, manufacturers and distributors of gypsum plaster and board products, maintain headquarters at Oklahoma City.

Jap Portland Cement Sent from Mariannas Given Superior Rating

Lt. Charles M. Adams, who before enlisting in the navy was in charge of distributing plants and vessels for the Huron Portland Cement Company, Detroit, recently sent to the company's chief chemist a small sample of Japanese Portland cement from a supply found by the Seabees on the island of Roi Namur in the Mariannas.

The chemist's report adds one more verse to the "don't underestimate the Japs" theme song, for he grudgingly admits that it was very good cement, although the sample was unfortunately not large enough to permit the making of strength tests. His analysis showed the following: SiO_2—22.17 per cent., Al_2O_3—6.51 per cent., Fe_2O_3—3.57 per cent., CaO—59.46 per cent., MgO 0.75, SO_3—1.26 per cent., ignition loss 5.45 per cent., insoluble residue 0.80 per cent., and surface area 2,033 square centimeters. The cement is known as the "Junk Brand."

The Japanese, who enjoyed in other times a wide reputation for their unfailing courtesy, considerately left a substantial amount of the cement behind them when they suddenly decided that important matters required their attention elsewhere.

Birmingham Slag Co. Announces Changes

Stockholders of the Birmingham Slag Company made several changes in the company's management group at their annual meeting, due to the death of C. Barney Ireland, a vice president, and the resignation of George C. McCullough, vice president and general manager, C. Eugene Ireland, company president and board chairman, announced.

Reelected to the board of directors were C. Eugene Ireland, C. A. Barinowski and N. L. Smith. New board members are J. Wallace Johnston and Charles W. Ireland.

Mr. Johnston also was elected to fill the position of vice president and general manager of the company, left vacant by Mr. McCullough's resignation. Mr. Johnston, former Birmingham resident and former vice president and manager of the Lone Star Cement Corporation, Alabama, comes from Washington, where he has been serving as special advisor and consultant to American cement manufacturers.

Other company officers elected by the board of directors are C. Eugene Ireland, president and chairman of the board; Mr. Barinowski, vice president in charge of sales and subsidiary companies; Mr. Smith, treasurer, and H. H. Himrod, secretary. Charles W. Ireland also was appointed assistant general manager and will continue his former duties as director of personnel.

Consolidated Completes Large Airport Contract

Expansion of the Army's airport at March Field near Riverside, California, was completed recently at a cost of approximately $1,000,000. About 75,000 cubic yards of the more than 200,000 cubic yards of concrete used for paving runway extensions, parking aprons, etc., was supplied by the Consolidated Rock Products Company of Los Angeles from a batching plant set up at the project. Large quantities of aggregate were also shipped to the project from Consolidated's Largo plant.

Considerable hot-mix asphalt was also used on the March Field job. This was prepared in a 2,000-pound Madsen Iron Works plant owned and operated by E. L. Yeager.

The two plaster plants of the Ideal Cement Company, Denver, this year received honors in a National Safety Council's safety campaign.

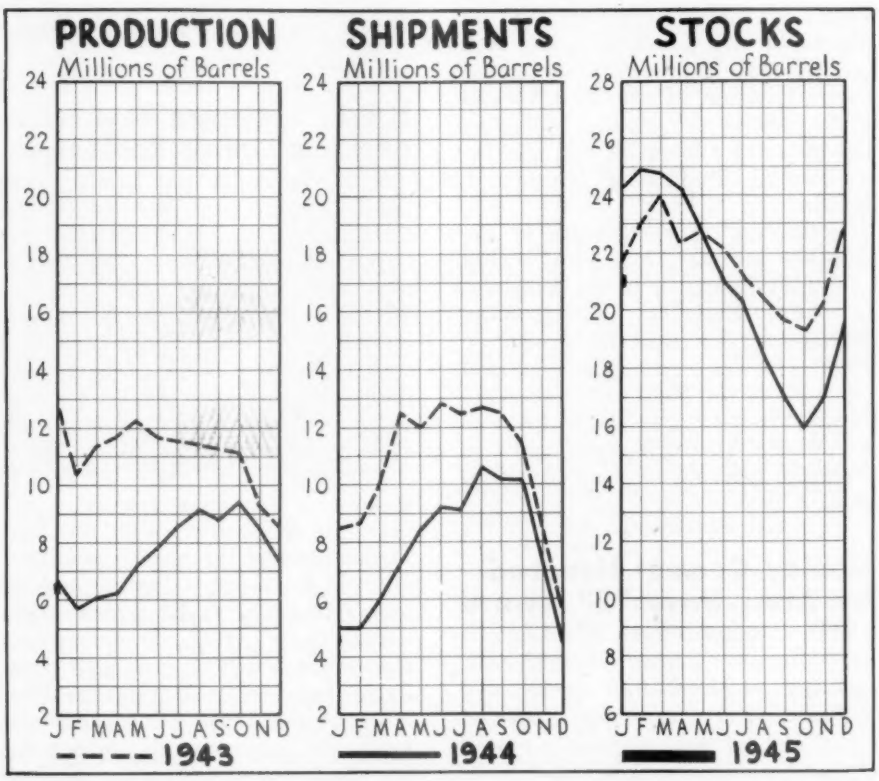
Ideal Cement Company Announces New Manager in Organization Shift

The following personnel change and promotion, effective as of January 1, 1945, has been announced by the Ideal Cement Company of Denver.

Charles Boettcher, president and general manager, relinquished his duties as general manager, effective January 1, 1945. He will continue as president of the company; Cris Dobbins, formerly assistant to the president and assistant general manager, is now general manager.

Kaiser Urges Cooperation in Clothing Collection

Active participation and cooperation of all American business men and women to assure success for the United National Clothing Collection in April, is solicited by Henry J. Kaiser, West Coast shipbuilder and leading producer of sand and gravel, cement, ready-mixed concrete, who is serving as National Chairman of the drive. Conducted in behalf of more than 50 voluntary war relief agencies and United Nations Relief and Rehabilitation Administration, it will be the only collection of clothing for overseas war relief during the spring of 1945.



Output of cement during January, 1945, totaled 6,379,000 barrels, or 1 per cent. above production of January, 1944. Mill shipments of 4,873,000 barrels during January were 3.4 per cent. below the movement from mills in the same month of 1944. Stocks of finished cement at mills on January 31 totaled 21,369,000 barrels, a slight increase over the quantity on hand at the end of December.

Druckenmiller New Penn-Dixie Head; Other Changes Made

B. W. Druckenmiller, former general sales manager of the Pennsylvania-Dixie Cement Corporation, of New York City, recently was elected

Fred L. Doolittle

president of the corporation, succeeding John A. Miller, retired. Appointed as his successor was Fred L. Doolittle.

Additional appointments included L. L. Van Nest, assistant general sales manager; Frank J. Sellinger, Jr., director of dealer relations; and Hugh R. Hamilton, assistant to the general sales manager.

Frontier Stone Products Formed by N. Y. Merger

The business of Pekin Stone Products Corporation and Frontier Bituminous Materials Corporation, both of Hinman Road, Lockport, New York, have been combined into Frontier Stone Products, Incorporated. Effective immediately, the merger involves no change in the officers or personnel; and Frontier Stone Products will continue in the production of commercial crushed stone, agricultural limestone and black top paving materials at the present location. M. J. Wurtenberger is president; E. K. Webster, secretary-treasurer.

Government Protects Rich Utah Deposits

Publicity given discovery of rich magnesium and potash deposits near Thompsons, Grand County, Utah, and fear that this would inspire a stampede by speculative locators, caused the Interior Department to withdraw 3,000,000 acres in all directions from Thompsons, Assistant Secretary of Interior Oscar Chapman testified Jan. 10 at a public hearing conducted by Senators Pat McCarran, Nevada, and Abe Murdock, Utah, in Washington, D. C. A week previously the department restored to entry all but 200,000 acres of the land, which had been withdrawn back in 1942.

Sulphur Company Head Honored by A.I.M.E.

Walter Hull Aldridge, president of the Texas Gulf Sulphur Company, and for 56 years a member of the American Institute of Mining Engineers, was recently named an Honorary Member of that organization.

Dr. Aldridge was born in Brooklyn, Sept. 8, 1876, and received his engineering degree from Columbia University at the age of 20. In 1929 Columbia honored him with a Doctor of Science degree. He was William Lawrence Saunders medalist in 1933.

Sink-or-Float Plant Operating in Colorado

The first heavy-media separation (sink-or-float) plant for processing nonmetallic minerals in Colorado has gone into operation near Cowdrey, Colorado.

Built by the Defense Plant Corporation and operated by the Western Fluorspar Corporation, the plant concentrates metallurgical-grade spar for shipment to eastern steel mills.

The new plant was designed and its construction supervised by the Western Knapp Engineering Company of San Francisco. The flotation medium is 100-mesh ferro-silicon in suspension.

The Western Fluorspar Corporation is a recently-formed concern headed by Leslie Miller, former governor of Wyoming. It acquired the properties of the Colorado Fluorspar Corporation several months ago.

Barton Mines Makes Fine Garnet Flour

In order to meet current demands for superfine garnet flour, The Barton Mines Corporation, North Creek, New York, has added new equipment. Such material is needed to supplement corundum superfines, now in short supply, for precision grinding of optical glass.

Warner Welcomes 10 of Former Workers Returned from War

Of the 257 former employees of the Warner Company of Philadelphia who joined the armed services, ten already are back on their old jobs at the company's plants after having secured their discharges from the army. Veteran among these vets is Major Charles W. Roberts, who returned to civilian life and his former work at the Bellefonte (Ohio) plant after four years in the army, two of which he spent overseas.

In re-employing former servicemen, the firm makes inquiry as to any special training they may have had during their period of service, so that they may be placed as advantageously as possible under federal regulations and union contracts.

W.P.B. Issues Report on 1944 Construction

Data on quantities of building materials used in new construction in the United States in 1944 and estimated consumption for the first quarter of 1945 were released by the War Production Board.

Use of materials is given for four major categories—military construction, plant expansion, civilian housing and all other non-military construction.

Total 1944 consumption of asphalt, cement and gypsum board, and estimated consumption in the first quarter of 1945 follow:

1944—Asphalt (Gypsum) 1,339,900 short tons; cement, 95,805,000 barrels; gypsum board, 2,067,000,000 square feet.

First quarter 1945—Asphalt, 268,100 short tons; cement, 19,382,000 barrels; gypsum board 418,000,000 square feet.

Nat'l Lead Company Begins Stripping Job

The Baroid Sales Division of National Lead Co. has contracted with the McGeorge Construction Company for the stripping of 400,000 yd. of overburden off part of a large deposit of barite at the company's operations in the Magnet Cove area. The stripping operation is under way. O. J. Benston, of Malvern is local superintendent for the Baroid company. Western Knapp Engineering Company's construction of new plant facilities for National Lead Company's Baroid Sales Division is progressing satisfactorily.

WASHINGTON NEWS LETTER

another P&Q exclusive

OF all the items on the President's agenda, top priority has been given to the successful establishment of the world-peace organization. The chief executive recognizes that Senate approval of the inevitable pacts and treaties will not be automatically forthcoming. If anything was needed to make Mr. Roosevelt realize that he commanded an insufficient personal and political following in the Senate to insure support for his programs, that purpose was served by the evident ease with which the Henry Wallace nomination was held up until the Secretary of Commerce post had been shorn of its vital lending powers. Concessions of the same magnitude in the international security proposals would be near-fatal, if not impossible. Consequently, an all-out campaign is in progress to win over or at least neutralize that part of the Senate opposition which is not definitely irreconcilable. Messrs. Truman and Byrnes, ex-Senators themselves, are now ambassadors extraordinary between the White House and Capitol Hill, and the persuasive powers of Mr. Hull are also being invoked to the extent that his health will allow. A deliberate, but sincere, effort is being made to bring Senators representing both parties into active participation in the international negotiations. The outstanding success of this arrangement at the recent Pan-American conference testifies to the effectiveness of the procedure, and holds out high hopes for a repeat performance at the main event, the crucial San Francisco meeting.

* * *

Congressional enthusiasm toward the appointment of Judge Vinson, former Economic Stabilizer, as Federal Loan Administrator is significant less because it put a period to the drawn-out Wallace-Jones proceedings than as an indicator of the temper of the present Congress and the President's willingness to assuage it at this time. The Wallace controversy itself spotlighted, in a way the Murray full-employment bill has not yet been able to do, the basic split in the Congress on the question of the responsibility of the federal government for providing employment after the war. Mr. Wallace had indicated clearly and frankly his intention to use the fiscal powers as an instrument of Administration economic policy and as a means of assuring full employment. Since it was obviously impolitic to attack an objective as universally accepted as full employment, Mr. Wallace was ostensibly deemed unfit to carry out the lending functions because of his lack of big business or banking experience, although admittedly as Agriculture Secretary he had handled several billions successfully. Yet Mr. Vinson, who has been accepted as a perfect choice, without the necessity of undergoing an inquisition to prove his fitness, admittedly has "never met a payroll or made a loan" in his career. Aside from the question of personal acceptability, the difference is that Mr. Vinson is regarded as more conservative, and, as a former Congressman, more receptive to Congressional sentiment. In this case, fortunately, Mr. Vinson's reputation for conservatism seems to have been earned largely as a concomitant of his resistance to revision of the "Little Steel formula," rather than because of any resistance to new ideas or lack of sensitivity to progressive forces. In his very first press conference, he declared that his primary task was to use the powers of the R.F.C. and other fiscal offices under his control to help provide the necessary number of jobs, and to work closely with Mr. Wallace to achieve this objective.

* * *

In the interest of maintaining a degree of peace and harmony in the Senate until at least the main international agreements have been ratified, the Administration hopes to keep the Murray full-employment bill (discussed briefly on this page two months ago) in committee for some time. In the meantime, the approach called for in that measure has awakened wide interest and is rapidly evolving as official Administration policy, and considerable work is under way to refine the more obvious crudities now embodied in the bill. The National Planning Association, an organization of forward-looking leaders from business, labor, government, and the sciences and professions, seems to have thrown its weight behind the plan. A recent N.P.A. report focuses on the construction industry in particular the general ideas contained in the Murray measure. Under this plan, a stabilization level of about $15,000,000,000 annually, considerably above any previous peak, would be established for total construction expenditures in the country. Public works would be used to supplement private building to the extent necessary to achieve this rate, and when total activity reached or approached the stabilization point, federal expenditures would be tapered off. The stabilization level could be changed by Congressional action, and would be implemented by a research organization and a public-works control authority designed to regulate the timing of publicly-financed construction. No direct control would be exercised over private building, but the latter would be importantly affected by the impact of the plan on the building industry as a whole and on the buying power of the general public.

* * *

Although it is difficult at this stage to forecast just what legislation will be adopted in the field of government planning for full employment, the direction and broad outlines of such legislation are almost inevitable. In fact, the two plans discussed above, both based on the same approach, represent the probable limits within which such legislation is likely to fall. On the one hand, government responsibility for "filling in the gap" would extend to the whole economy and would be tied directly to the additional number of jobs and the additional volume of national product requiring federal expenditure and investment. In the N.P.A. plan, such responsibility would be restricted to what is regarded as the key industry, at least in the immediate post-war years; government spending would still affect employment and national output significantly, but less directly. In either event great stress would be placed upon stimulating economic activity by means of extensive public-works programs.

North American Cement Appoints New Officers

The following appointments were recently announced by the North American Cement Corporation, New York. John J. Porter, formerly president, has been named chairman of the board of directors; and Thomas J. Harte, former executive vice-president, becomes president.

the VICTORY *Program*

. . . . . AND YOUR BUSINESS

CONCRETE RENEGOTIATION EXEMPTION EXTENDED.—The application filed with the War Contracts Price Adjustment Board by the National Ready Mixed Concrete Association for an extension of the exemption of ready-mixed contract from renegotiation was approved by the board on February 27. The approval is embodied in the following letter addressed to the National Ready Mixed Concrete Association for the attention of V. P. Ahearn, executive secretary:

Reference is made to your letter of January 29, 1945, relative to the extension of the exemption previously granted to ready-mixed concrete.

The War Contracts Price Adjustment Board has extended the exemption of ready-mixed concrete, now set forth in paragraph 845 of the Renegotiation Regulations, so as to make it applicable to amounts received or accrued during fiscal years ending after June 30, 1943, and prior to July 1, 1945. The definition of the exempted product remains the same as set forth in RR 845.

J. S. Feight
Lieutenant, U.S.N.R.
Secretary

CONSTRUCTION MACHINERY.—Limitation Order L-192 was amended again on March 14. The procedures remain unchanged in so far as obtaining new equipment listed in Schedule A is concerned. The approval of the Construction Machinery Division of the War Production Board is required before any item listed in that schedule can be released. For items listed in Schedule B applications must still be made on form WPB-1319.

The principal change made by the new amendment affects emergency automotive repair parts and is embodied in paragraph (h) of the order. The new paragraph reads as follows:

Repair Parts

h) *Emergency automotive repair parts.* (1) If a person needs automotive replacement parts for emergency repair of his "equipment" which can not be operated without such parts, he may go to a "distributor" of such parts as defined in Limitation Order L-158. In such emergency, if the distributor does not have the parts in stock, he must file with his order to the "producer", as defined in Order L-158, a certificate in substantially the following form:

Certificate for Emergency Repair Order—Automotive Replacement Parts

The undersigned purchaser certifies, subject to criminal penalties for misrepresentation, that the replacement parts specified in the attached order are essential for the repair of the following vehicle, which cannot now be operated without such parts:

Make..... Engine Number.....
Signed .....
(Firm, partnership or corporation)
By .....
(Name and title of individual)
.....
(Address of firm, partnership or corp.)
Dated .....

A copy of this certificate must be retained by the distributor issuing it as a part of his records. The standard form of certification described in Priorities Regulation 7 may not be used in place of the above certificate.

(2) A producer as defined in Limitation Order L-158 who receives an order accompanied by a Certificate for Emergency Repair as described above must give such order precedence to the extent specified for emergency orders in paragraph (L) of Order L-158. All provisions of that paragraph apply to automotive replacement parts required for emergency repair of "equipment" as described above.

LIME SHORTAGE.—The Lime Industry Advisory Committee believes that the current critical supply situation can be corrected without resorting to the allocation of lime, if the coöperation of the consuming industries is secured, the War Production Board reported March 20. The committee, which met recently to discuss ways and means of providing chemical lime for war industries and essential civilian needs, explained that the present critical situation was due to increased demands, coincident with cutoffs of industrial gas, loss of production with low-grade fuels, inadequate labor supplies, and loss of capacity when some plants were forced to close.

To avert allocation action by the W.P.B., the immediate coöperation of industries using lime is essential. As an example of conserving high-calcium lime, essential to war industries, one member said that the use of dolomitic lime might be eliminated in certain war plants for neutralizing acid liquors prior to their disposal.

Another suggestion was the early placing of orders with lime manufacturers so as to enable proper scheduling of deliveries and balancing of future supply and demand. The placing of orders well in advance of expected delivery was said to be especially important in the Middle West and Northeast where producers are not receiving sufficient boxcars to meet their over-all daily production. In addition, the turn-around time on hopper-bottom cars was also reported as having increased materially.

OCCUPATIONAL DRAFT DEFERMENT.—The extent to which the War Production Board will go in helping employers obtain occupational deferment in worthy cases is indicated by *Advice to Employers Regarding Selective Service,* issued March 1 by the Office of Manpower Requirements of the W.P.B. All applications for occupational deferment should be made to local draft boards, and where the employee for whom deferment is sought is doing necessary work from which he can not be spared it is advisable that the applications be handled by one of the principal executives of the employing company.

Except for five critical war industries —steel, coal-mining, transportation, synthetic rubber, and non-ferrous mining (copper, lead and zinc)—the W.P.B. still operates under instructions not to support a deferment application made for a man 25 years of age or younger.

In the age group 26 through 29 the W.P.B. may be helpful but only in the cases of employees who are actually "necessary to and regularly engaged in an activity in war production or in support of the national health, safety or interest and that he is irreplaceable and indispensable thereto." The W.P.B. can not certify for deferment any "indispensable" man if he can be replaced by a worker doing less essential work within the plant or establishment or by recruitment from without. An "indispensable" man is considered replaceable if a recruit or transferee is available and can be qualified to perform the "indispensable" man's work by three months of intensive training.

Men in the age group 30 through 33 do not require certification by the W.P.B., but if they are to qualify for deferment they must be "necessary to and regularly engaged in" the type of activity mentioned in the opening sentence of the last paragraph. This requirement is a stiffening of the previous one which required only that men in this age group for whom deferment is sought should be regularly engaged in an essential activity.

For men in the age group 34 through 37 no certification is required and they may be deferred if they are regularly engaged in activities in war production or in support of the national health, safety, or interest.

The five critical war industries already mentioned have been given a limited exception. Thirty per cent. of the approximately 800,000 men in the age group of 30 years or less had been set as the limit on deferments, but Selective Service raised this ceiling for the five critical industries. This will have the effect of drawing from other industries men who might otherwise have been deferred. The five industries given special rating were required to prove that each man for whom deferment was claimed was "indispensable and irreplaceable," that the duties he was performing could not be handled by curtailing some other part of the industry, and to provide evidence that the drafting of the man would result in a loss in critical war production.

The W.P.B. document contains the following reference to the War Manpower Commission's List of Essential Activities:

The Director of Selective Service has adopted War Manpower Commission's List of Essential Activities revised January 13, 1945, as a guide in occupational classification matters along with all other available information, but the fact that a registrant's activity is not listed on the List of Essential Activities does not preclude consideration for occupational deferment if the Local Board, upon its own knowledge, determines that the activity in which the registrant is engaged qualifies him for occupational deferment under the policies and procedures prescribed for registrants in his age group.

TRUCK TIRE SUPPLY CUT.— A 50 per cent. cut in the number of heavy-duty tires allocated to meet essential commercial motor vehicle requirements for the second quarter of 1945 has been made by the Office of Defense Transportation, and the number allocated may be subject to further reduction. The shortages have resulted in the temporary cessation of 7-day-week tire production, a 4-month program adopted by labor and management in the tire industry in December, 1944, to increase heavy-duty tire production to meet increased military and essential civilian needs.

As claimant agency for civilian transportation, the O.D.T. requested 2,781,000 truck and bus tires to meet basic requirements for replacement purposes for the April, May and June period. The War Production Board allocated 1,410,000 or 50.7 per cent. of the amount requested, leaving a shortage of 1,371,000 tires.

The amount allocated will restrict distribution to a rate of 156,000 tires per month in the sizes 8:25x20 and larger and 314,000 tires per month in sizes 7:50 and under. The second quarter total is 431,400 over the first quarter total of 978,600; the larger sized truck and bus tires being available at the rate of 110,200 a month during the first quarter and smaller sized tires at the rate of 216,000 a month.

Maine Cement Plant Combines Two Kilns for Efficiency and Economy

• The kiln-building extension with second section of kiln in place. Coal-mill building is at left.

IN JUNE 1944 the Lawrence Portland Cement Company started reconstruction of the kiln departmen of its plant at Thomaston, Maine, involving a change from two-kiln to one-kiln operation.

The purpose of this modernization is to obtain more efficient kiln operation resulting in a substantial fuel saving and improved quality of the cement. The change will also enable the plant to balance the operation to better advantage with a consequent overall saving in critical labor.

As originally built in 1927, the plant had two 11- by 200-foot kilns fired with pulverized coal from a bin system and discharging into 10-

• Pilasters of the old coal tower ready to be knocked out. See next photograph.

by 90-foot rotary coolers. The coal mill, housing a drier and two pulverizers, was attached to the east end of the kiln building and in line with the kilns. Included in the coal-handling equipment were scales and coal feeders. Raw grinding is by wet process with two Allis Chalmers compeb mills and Oliver disc filters, reducing the moisture content of the slurry from 37 per cent. to 18 per cent.

In 1942 direct firing was substituted for the bin system, using two Raymond bowl mills, eliminating the old drier and pulverizers. (See Pit and Quarry, July, 1940, pp. 69-70.)

• Coal tower shoring blasted and building falling. See next photograph.

This change also terminated the use of the coal-mill building except to house the coal bunker and necessary conveyors.

After studying various possibilities, in the use of existing equipment in the proposed change, it was decided to join sections of the two 11- by 200-foot kilns to make one 11- by 356-foot kiln with an F. L. Smidth modified chain system, to replace the rotary coolers with a Fuller inclined movable-grate cooler and to use the Raymond bowl mills for direct firing. One of the Raymond mills would, under normal conditions, supply enough fuel but both were installed, the other acting as a standby.

The extended kiln is believed to be the longest kiln in the world fed with filter cake, and the great length coupled with the use of an elaborate system of heat-recuperating chain loops suspended in the feed end of the kiln, are the principal reasons for the expected coal saving. A much lower stack-gas temperature will be obtained and a corresponding amount of heat is saved.

By lengthening the kiln the time of reaction for the raw material to turn into cement clinker is naturally increased which results in improved quality. The use of the inclined-grate cooler will provide quick cooling or "air-quenching" of the clinker which is also considered an advantage from the standpoint of quality of the cement.

The site of No. 1 kiln was chosen for the erection of the new extended kiln, utilizing the existing stack. Each of the old kilns was supported on four tires spaced at approximately 52-feet centers. By erecting three new kiln piers it was possible to support the extended kiln on seven tires without changing their location with respect to the shell.

Great difficulties were encountered with the sub-foundations for the new

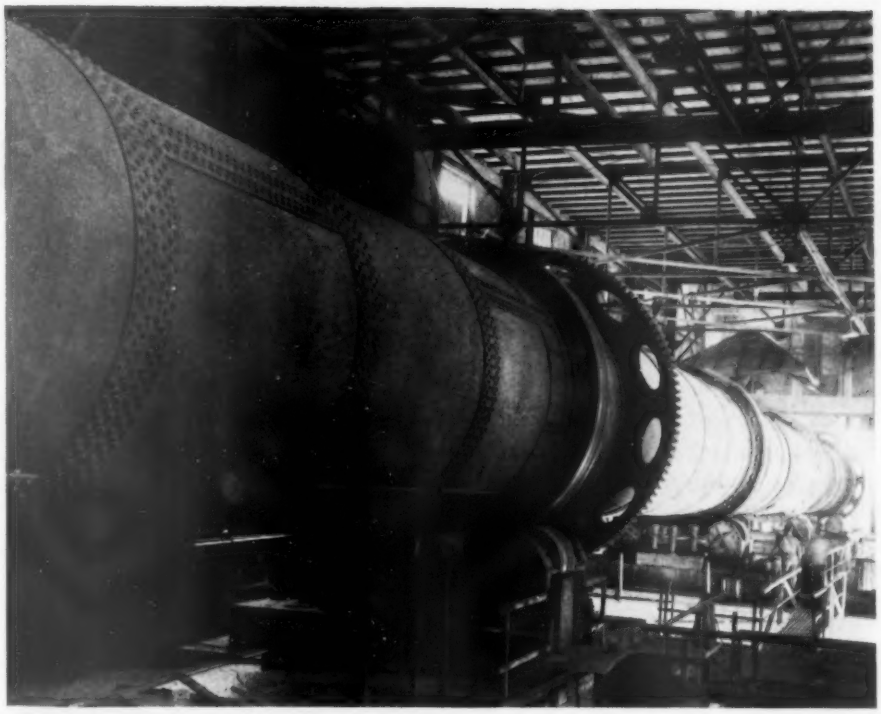
• Defunct coal tower ready to be broken up. Note slight damage due to falling.

kiln piers. It was found that for Pier 1, for instance, solid rock bottom was about 43 feet below ground level which was about 20 feet deeper than for the present kiln piers. This

necessitated piling supports for all 3 new kiln piers.

The major job was moving the kilns with the firebrick lining in place and placing them in line on the selected site. Each of the two kilns with firebrick lining weighed about 900,000 pounds. After the 3 new kiln piers were built, wooden trestles, which were supported on the floor, were placed at intervals throughout the length of the kiln building. Two heavy H-beam stringers were run on top of the wooden trestles parallel to the kiln axis. The No. 1 kiln was supported on eight wooden cradles and heavy steel skids rolling on extra-heavy pipe rollers which were in turn supported on the H-beam stringers. Kiln No. 1 was then moved downhill on the pipe rollers a distance of 156 feet to its final position. The section of the No. 2 kiln to be used was then rolled on its tires on the piers to line up with the No. 1 kiln and the two sections were then riveted together.

Each of the old kilns was driven by a 75-horsepower slip-ring motor. From readings of power input it was determined that the new kiln would not require more than 100 horsepower but as it was impossible to obtain early delivery on the type of motor desired, it was decided to use the two 75-horsepower motors driving the kiln in parallel. The girth gears were left in their original position on the kiln shells, placing the drivers on the third and sixth piers. To insure equal load distribution on the motors, they were hooked up with separate controls exactly as when operating normally except that the controllers were tied together mechanically, to be operated by a common handwheel from the front of the control board. The secondary circuits of the motors were balanced electrically to obtain equal drop in the external secondary circuits and extra resistance was placed in each circuit to increase the slip. This added resistance will not affect the speed of the kiln as the motors are underloaded. A test run has shown that the motors divide the load evenly at starting and at all speeds.



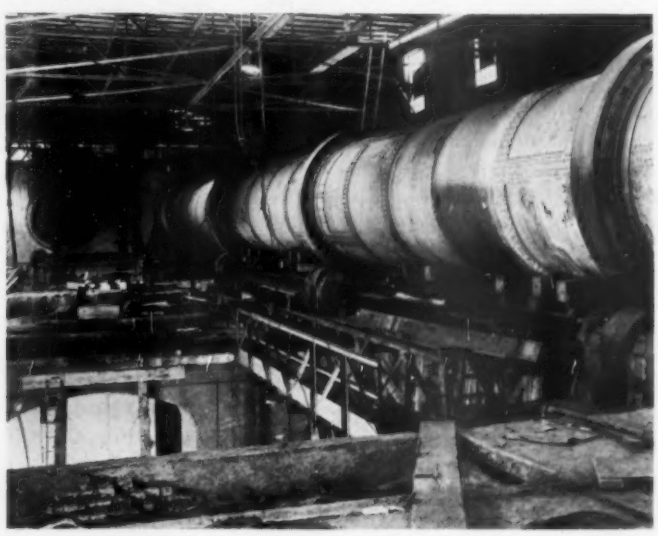
• The two kilns being aligned before putting on the connecting butt strap. The two drive gears are shown.

The extension of the kiln necessitated some major changes in the buildings. The section of the building over the burning floor and the coal mill was of reinforced concrete. Part of the east wall of the building over the burning floor had to be removed and also several columns supporting the roof. A steel frame had therefore to be erected to carry the roof load. The north wall of the coal mill was in line with the center line of the kiln, making it necessary either to move the building or to tear it down and replace it with a new one. The latter course was decided upon as the moving would have been too costly and the building too narrow. After the coal mill was torn down and removed a new 25- by 130-foot building was erected abutting on the old kiln building.

The elimination of the coal mill building presented some difficulties. It consisted of a coal-drier section 23 feet wide by 55 feet long and 37 feet high, and a coal bunker tower 23 feet by 20 feet and 65 feet high. The entire structure was

(*Continued on page* 74)

• The No. 1 kiln at right has been moved into new position. No. 2 kiln is being moved into line.



• View toward feed end showing the two kilns being aligned for final assembly. Connecting butt strap is not yet in place.

The Art of Effective "Help Wanted" Advertising Outlined

The writer explains not only how to get help, but good help that can do the job and stay with you.

By WILLIAM McGREGOR

THERE was a day when a simple statement of your needs in the help-wanted section of your newspaper would bring a line of applicants waiting at your door when you arrived in the morning. Remember?

To-day more than a little extra thought is required to obtain good help. But there are ways to do it.

If you have some special attraction to offer, by all means mention it. Now, instead of a simple statement of your needs and a request for the job seeker to write to a blind box number and sell himself to you, you must sell the job to the prospective employee.

The general rule is to think from the applicant's viewpoint when preparing the ad—what you have to offer him—rather than from your own—what you want. You are in competition with many others for the people who might work for you. The same rules you used to follow in advertising for customers now apply to your advertising for help.

Some resultful phrases are, "overtime pay", "permanent position", "rapid advancement", "pleasant surroundings", "established firm", "post-war future", "you'll like this work", "promotion assured".

The use of bolder type or larger space is regulated by the difficulty of filling the particular position you advertise, and by what local papers will allow. Many papers now restrict size; but if you can get it, a larger, "dressed-up" ad will justify the extra cost.

If you can use part-time help, consider the situation of students in your territory. If you are directing an ad to this group, copy can begin "WORK NEAR HOME..." or "PROFITABLE PART-TIME WORK."

Appealing to a particular group is often effective. "SERVICE MEN'S WIVES, you are helping them fight when you work at..." is one way to start such an appeal.

One man maintains that older women are an asset. They are more easygoing, more understanding—not feeling bad from last night's party or wondering about to-night's date. One of his ads begins, "THAT AWFUL LIAR..." and goes on to point out that the calendar is a liar if it says you're 60 when you feel 40, then urged older folks to apply.

Switching around the classifications is a help. When you start your ad: "MAN to do so-and-so..." your copy is going to appear in the column along with lots of other ads starting the same way. Starting with the company name is one way of being different.

Running more than one ad in an issue increases results and when you do this, arrange the starting word so that one ad appears near the top of the column and the other near the bottom. For example, if you need a clerk: "QUARRY wants a clerk, etc." and "Clerk, for permanent position, etc." C. A. Hurt, secretary of the Rock Hill Stone & Gravel Company, St. Louis, Missouri, will run ads under four classifications at a time, starting: "DRILLERS..." "JACK HAMMER..." "QUARRY HELP..." "LABORERS..."

The help-wanted columns of your local paper are not the only media you can use.

H. C. Krause, vice-president of the Columbia Quarry Company, St. Louis, reports that his company has had very good success by canvassing present employees. Often the employees will have a friend or neighbor who can fill the job. Thus you can get the help you want without any advertising expense. And as a rule, a high type of employee will have a high type of friend to recommend.

By checking his records and contacting former employees who had left to get married, or retire from business for some other reason, one man has succeeded in bringing back some help for the duration.

One company has obtained some good employees through watching the Situations Wanted columns!

Another inexpensive method, sometimes overlooked, is a sign in your office window or at the entrance to your plant. It might not bring daily results but sooner or later it can catch the eye of just the person you seek.

Display advertising in newspapers costs more than classified but it is seen by many more people. Many firms report good results from this method.

Some quarry men have questioned whether it is wise to let the general public know you need more help. Under ordinary circumstances the answer would be "No," but everyone knows of the help shortage and help-wanted advertising which the public sees can do no harm. In fact, might it not help explain delays or errors?

Ads in out-of-town newspapers are often effective. Many firms report that they have obtained good results by this method.

Radio is good if you want to employ a large number of new people. Ordinary radio time is usually expensive, but your local station may work out a way to run your ad in a spot announcement, on a group-advertiser program, or something of that sort. You can contact a station to see what they have to offer.

Don't overlook your trade paper. Quarry firms report good results from both display and classified ads in PIT AND QUARRY, especially for department heads and skilled help.

Your want ads must succeed in bringing not just *help,* but good help that can do the job and stay with you. One man makes an effective test of the applicant's willingness to work by inserting in his ad: "Apply to Mr. Jones at 7 A.M." He finds that, while he gets fewer applicants, those who are willing to come in early are better workers and are really looking for a job and not just a soft berth.

One firm has been unusually successful in holding employees with less than average absenteeism or labor turnover. They attribute this partly to the fact that they have had the courage to turn down applicants about whom they were doubtful, even when they needed help badly. Also, they take the trouble to work out hours that will be most suitable to the employee. They check the transportation schedule and help the applicant arrange a route and time that will be most convenient.

From all reports it does not seem to be quite as difficult to obtain help to-day as it was a year ago, but it still is a major problem. In the near future, we all hope, things will change to normal. But, while everything may not happen for the best, we at least can make the best of what happens and thus the things we learn about effective "Help Wanted" advertising now can assist us in the future to obtain the best help in the most economical manner.

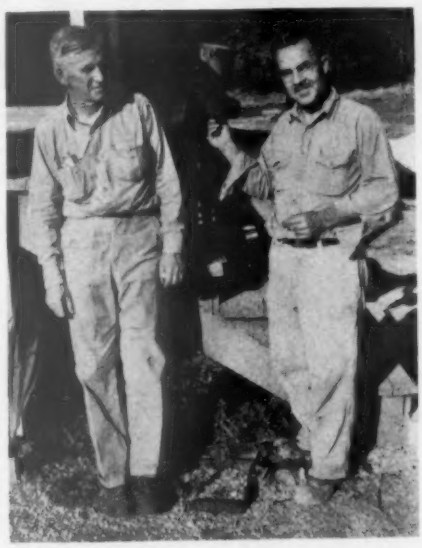
California Crushed Stone Producer Uses Glory-Hole System of Mining

another ON THE SPOT report

ONE of the most interesting crushed-stone operations ever visited by the writer is that of the El Dorado Limestone Company at Shingle, California, in the historic gold-mining section east of Sacramento near Placerville, formerly known as "Hangtown." Like the section in which it is located this operation also has a long and interesting history, dating back into the 1860's when lime was first burned there in pot kilns. The main features of this operation are the shrinkage-stope mining system and the many interesting and unusual methods employed in the mine and the plant.

• General view of plant which shows how mine shaft headframe also serves as part of plant framework. Hoist house is at right.

Little was done on this property since Gold Rush days until 1914 when a small crushed-stone plant was built. In 1917 the name El Dorado Lime & Minerals Company was adopted. A small amount of lime was also produced but this venture was unsuccessful. In 1918 the surface quarry was abandoned and the sinking of a mine shaft was begun. In 1920 J. H. Bell joined the company as mine manager and, in May, 1921, when the company went into receivership, he was appointed receiver. In 1931 the receivership was lifted and the company was reincorporated as the El Dorado Limestone Company with Mr. Bell as president and general manager.



• J. H. Bell, president and general manager, and C. R. Nichols, mine superintendent.

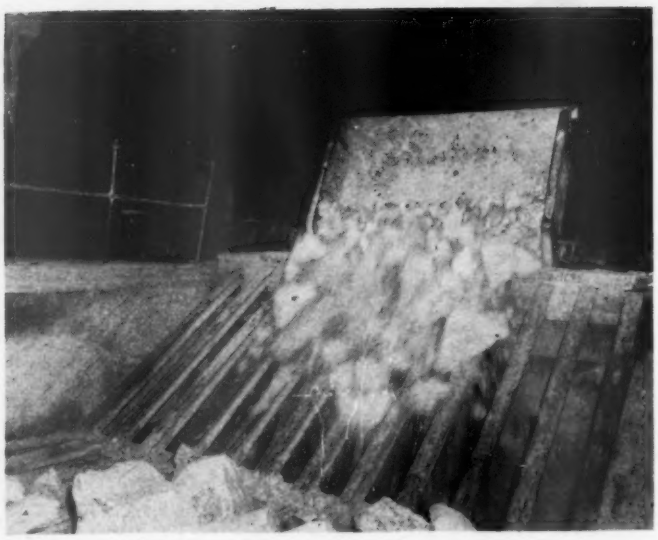
Up to 1920 the output of the plant was about 15,000 tons annually of large rock for steel mill flux and other similar purposes. This demand grew to about 30,000 tons annually up to 1931. At that time the plant was enlarged and improved and new products were added. One of these was rock for sugar refineries and the fines formerly wasted were sized and sold as crushed stone. A narrow-gauge railway had been used to haul the various products made to a siding on the railroad 2 miles from the plant where the stone was discharged

By W. E. TRAUFFER

from the trestle into railroad cars for shipment. This system had a capacity of only 200 tons daily and was replaced with a standard-gauge spur track to the plant which has an unlimited capacity loading direct into cars. The original mine hoisting equipment had a capacity of only 400 tons daily. This was replaced in 1940 with a new hoist and larger skip buckets which increased the mine capacity to 800 tons in 16 hours of 2-shift operation. At the same time the crushing and screening plant was rebuilt and enlarged to its present capacity of 50 tons per hour.

The main deposit is a bed of high-calcium limestone from 60 to 100 feet thick between beds of Calaveras slate and dips 85 degrees to the east with a strike of about North 30 degrees West. The stone has a calcium carbonate content of about 98 per cent. and contains magnesium carbonate, and iron and aluminum oxides, with less than 0.25 per cent. of silica. There is so little variation in the stone that only occasional check analyses are made and no selective mining is necessary. The actual length and depth of the deposit have never been determined and no outcroppings are known to exist. Separated from this ledge by 40 feet of slate and parallel to it is a foot-wall deposit of limestone 40 feet thick. Both deposits are being worked through the same underground workings.

The mine was opened through a 3-compartment vertical shaft from the surface in the main ore body. This shaft is now 752 feet deep. Drifts 8 feet high and 20 feet wide were driven in both directions in both deposits, first at the 150-foot and later at the 300- and 470-foot levels, and these now extend 700 feet north and 1,300 feet south of the shaft. The shrinkage stopes are



• Left—Stone being loaded into mine cars from ore chute in drift at 470-foot level. One of the electric battery locomotives is at right.
Right—Stone being dumped from mine car over grizzly above skip-loading pocket. Oversize stone is sledged through horizontal section in foreground.

250 feet long with 20-foot pillars between them. About 4 feet of limestone is left on each side to support the slate. The stopes from the 150-foot level were worked to within a maximum height of 80 feet below the surface, enough limestone being left to support the overburden. About 12 feet of stone is left between the bottom of a stope and the roof of the drift below. When the stope above is worked out this 12-foot thickness of stone is shot down into the lower stope. In this way all the stopes from the 300-foot level have been mined up to within 80 feet of the supported overburden and are up to 230 feet in depth. Some of the stopes between the 300- and 470-foot levels have also been worked out but have not yet been pushed through to the stopes above.

Several years ago work was begun on the development of a 650-foot level and this is now well under way after overcoming a series of difficulties. The principal one was encountered when sinking the main shaft to the 752-foot level. At a depth of 650 feet a fault was encountered which dips 80 degrees to the west and strikes about parallel with the length of the shaft. This fault was carrying water with 170 pounds pressure at the point of intersection. Efforts to grout off this flow against pressure were unsuccessful but it was found possible to reduce the water pressure on the 470-foot level by draining a larger amount in the shaft. The shaft was then drained down to zero pressure in the bottom and a normal flow of 150 g.p.m. of artesian origin was found. The shaft was then concreted for a distance of 70 feet from the bottom and deep-well turbine pumps were installed.

The ore chutes from the stopes down to the three existing drifts are on 30-foot centers but are staggered on opposite sides of the drifts which are 20 feet wide and are double tracked. The chutes are cut 5 feet square and have about a 3-foot clear opening when they are timbered. They are heavily timbered and are lined with ¼-inch steel plate near the bottom as an average of over 15,000 tons of stone is drawn through a chute. Up to 350,000 tons of stone has been drawn from a single stope through 16 chutes.

The drilling in the stopes was originally all done with drifter drills on 42-inch arms mounted on individual columns. These drilled 7 radial holes from a single setup and each round was blasted when completed. Several years ago a new system was adopted with the Gardner-Denver AG79 automatic-feed drifter drill mounted on a 3½-inch by 20-foot aluminum cross bar supported at each end by 3½-inch by 6-foot aluminum columns. The drill is attached to the bar and the bar to the columns by special universal clamps which can be operated without a wrench.

Standard drill rig being used to open a new chute pocket.

The first setup in working across a stope has one column near one side and the other near the center of the stope. A row of parallel holes about 3½ feet apart is first drilled 7 feet above the old roof. Then the bar is lowered and another row of holes is drilled parallel to the first row and 3½ feet below it, leaving about a 3½-foot burden. When this row is completed the column near one side of the stope is moved to the other side and the two rows of holes are completed across the stope, making two complete rows of 11 to 20 holes each, depending upon the width of the ore body. With this system the area drilled is about 50 per cent. greater than with the same number of radial holes. This method makes possible better spacing of the explosive load with an even burden on all parts of the hole resulting in better fragmentation and less secondary shooting. It also increased the stone yield by allowing 3½ to 4 feet of burden for the entire length of the hole where only 3 feet could be allowed on the points of the holes with the old method. The waste and danger of unexploded dynamite in the muck pile has also been eliminated. Due to cross slips in the formation the former method sometimes resulted in cut out holes. The old-style rigs are now used only when drilling chute pockets, man ways, etc., or when extending drifts.

A 10-foot round is drilled with

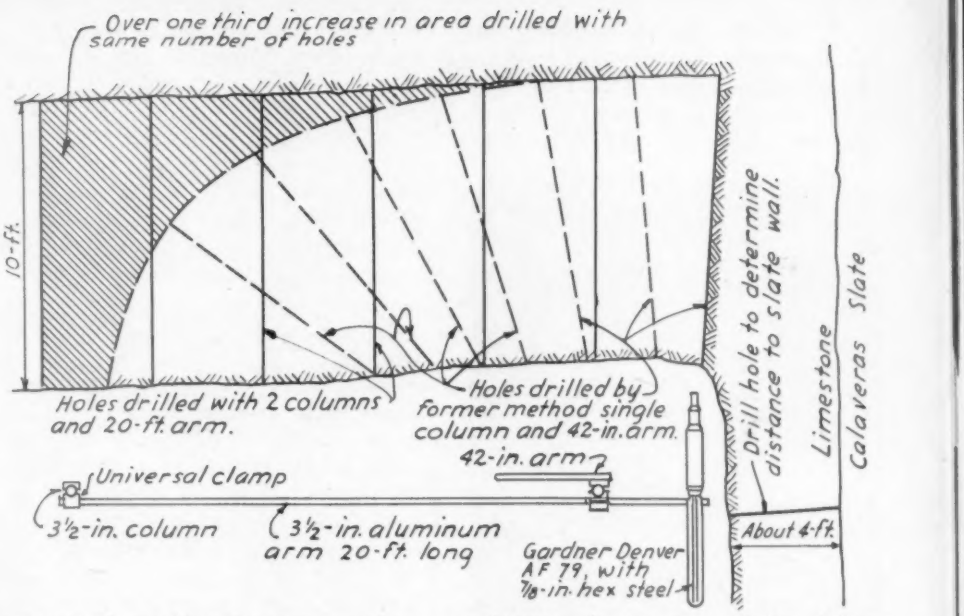
11-foot steel. Gardner-Denver 7/8-inch hexagonal drill steel is used with the bits ranging from 1 3/8-inch for starting down to 1 1/8-inch for finishing. The use of small holes makes it possible to spread the load of 1-inch dynamite sticks in order to get the best possible fragmentation. Hercules EP60 ammonia dynamite is used. Hercules no-delay electric caps are used in the bottom row of holes and No. 1 delay in all the top holes except the end ones in which No. 2 delay caps are used.

The blast is detonated from a station at the mine shaft by the shift boss after all the men have been accounted for. Using the old method only 74 tons of rock was brought down per machine shift of 8 hours. With the present system the output averages 150 tons per machine shift. The yield is about 4 tons of stone per pound of explosive including that used for secondary shooting. Only a small amount of mucking is necessary after each shot to level off the working floor.

C. R. Nichols, mine superintendent, standing on top of broken stone in a stope.

Some experimental drilling has been done with air-operated diamond drills for long-hole blasting. This equipment was first used to drill horizontal holes radiating from three raises in a stope 250 feet long by 80 feet wide. The holes were 40 feet long and the rings of holes were 4 1/2 feet apart vertically. This method was discontinued because of the footage of hole wasted; as the holes neared their common center the distance between them decreased and the number loaded decreased. As a result in some cases only half the length of a hole would be shot.

The next experiment was in slotted raises 8 feet wide and 80 feet long which is the width of the stope. Horizontal parallel holes were drilled 4 feet apart and with 3 1/2 feet of burden. This method was also abandoned partly because of the extra preliminary cost of running three raises and an intermediate sub-level not necessary in the regular system of stoping. J. H. Bell, president of the company, does believe, however, that diamond drilling has a future in such mines with light-weight, high-speed electric drills. He believes that a retreating system of bench mining using vertical holes can be laid out which will have none of the present disadvantages.


Over one third increase in area drilled with same number of holes
10-ft.
Holes drilled with 2 columns and 20-ft. arm.
Holes drilled by former method single column and 42-in. arm.
42-in. arm
Universal clamp
3 1/2-in. column
3 1/2-in. aluminum arm 20-ft. long
Gardner Denver AF 79, with 7/8-in. hex steel
About 4-ft.
Drill hole to determine distance to slate wall.
Limestone
Calaveras Slate

• Diagram showing more efficient drilling done with system of parallel holes than with usual radial system.

The rock is loaded from the ore chutes into 2 1/4-ton one-way side-dump steel cars on 30-inch gauge tracks with 30-pound rails. Some plugging of the chutes occurs at times and those that can not be barred down are blown clear with 1 or 2 sticks of explosive. An occasional large stone must also be broken with explosives. The cars

• The aluminum column and cross-bar system used for drilling in this mine. Left: Upper of two rows of holes being drilled near center of stope. Right: Starting lower row of holes at one side of stope.

are hauled in trains of three by two 3-ton electric battery locomotives, one of Jeffrey and the other of General Electric manufacture. A hook operated by an air cylinder is used

The balanced-type primary jaw crusher above the plant storage bins with pan conveyor below.

to dump the stone from the cars over a grizzly made of 75-pound rail with 8½-inch openings. This grizzly has a sloping section through which the smaller stones fall. The plus-9-inch pieces slide onto a horizontal section where they are sledged through.

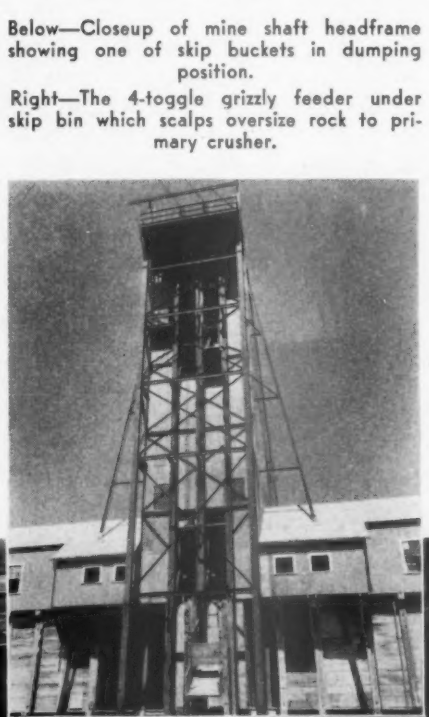
The stone passing through the grizzly drops into a 400-ton pocket from which the two balanced skip buckets in the shaft are loaded through chute doors 50 feet below the station or car-dumping level. Each skip bucket has a man cage under it. A pair of horizontal steel doors opening upward just below the skip level is ordinarily kept closed when loading in the shaft to catch any spillage which is cleaned up at the end of each shift. Only about 5 minutes are required to open these doors when the lowest level is to be reached. The shaft is lined with concrete from the top down 125 feet to the surface of the rock at this point. Below this level 8-inch timber shaft sets are used to support pipes, etc.

At the new level measuring pockets with air-operated quick-opening gates were installed to facilitate skip loading. The 650-foot station and grizzly are now being installed preparatory to starting the drifting program. For the 30-foot-wide drifts on this level the 20-foot aluminum cross bar employed in the stopes will be used with two drills on the same setup. Mucking will be done with a 50 "A" Conway shovel which will later be used for loading from the stopes. This work will be carried on as rapidly as possible with the current manpower shortage.

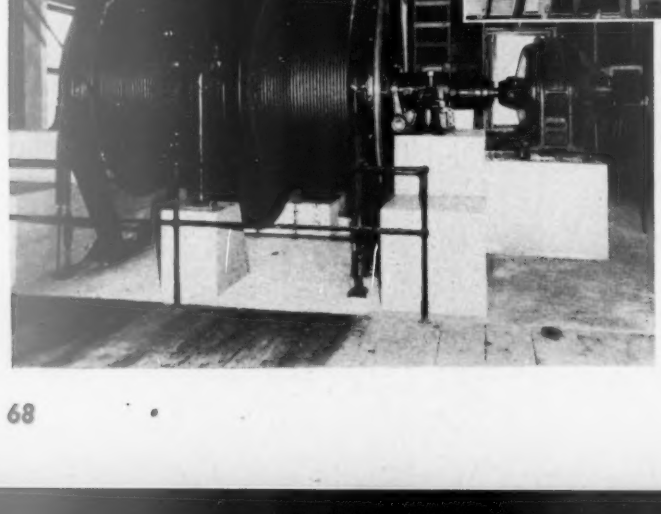
In addition to the main shaft there are two other vertical shafts into the mine and together they provide adequate natural ventilation. One of these is actually a small raise up into the old original quarry.

Below—Closeup of mine shaft headframe showing one of skip buckets in dumping position.

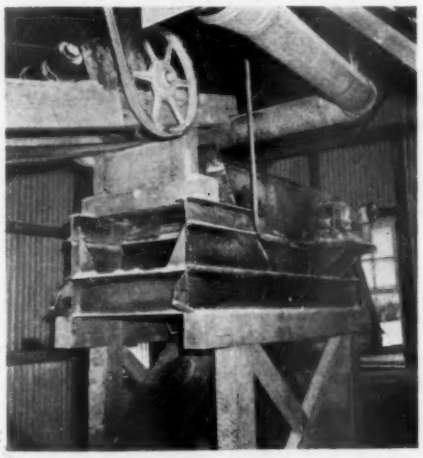
Right—The 4-toggle grizzly feeder under skip bin which scalps oversize rock to primary crusher.



The 2-drum mine hoist which operates balanced skip system with its 225-hp. motor at right.



Drainage is also no problem and about 200,000 gallons of water is pumped out daily. Most of this is used to irrigate the gardens and small farms of company employees and a

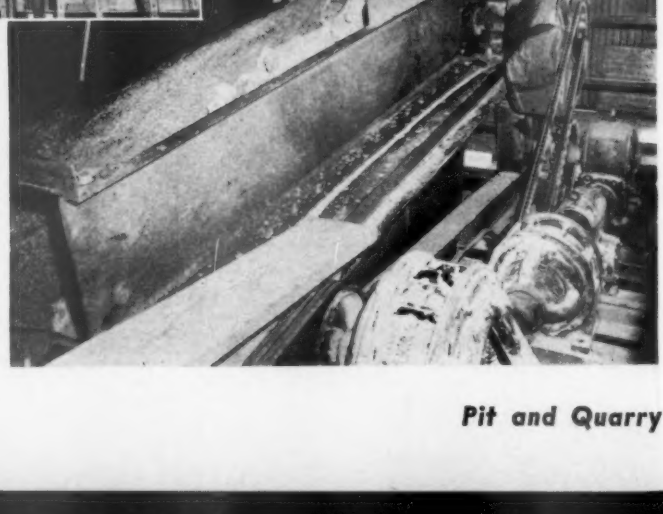


The vibrating screen which makes first separation of rock following crusher.

100,000-gallon storage tank is provided for this purpose and to supply pressure for the plant and fire-protection system. The drinking water and camp supply is obtained from the worked-out 150-foot level.

Because the ground near the plant is a fill and not sufficiently stable to support the inclined columns of the 100-foot main shaft headframe its position with respect to the plant is just the reverse of the usual. This is actually an advantage as the frame is used as part of the framework of the plant. The headframe is all-welded steel construction and was designed, fabricated, and erected by the company's employees.

The balanced skip system is operated by a Wellman-Seaver-Morgan 2-drum, 750-ft. per min. hoist which is driven by a 2,300-volt, 225-horsepower General Electric motor. The hoist has Lilly controls to pre-



vent over-winding and the Lilly brakes on the hoist can be set either from the hoist room or the headframe tower. American Steel & Wire 1⅛-inch Lang-Lay wire rope is used.

Ordinarily the skip buckets discharge the rock into a 150-ton cir-

Another view of primary crusher showing pan conveyor to sizing screen in background.

cular steel bin near the top of the plant building. When desired, however, they can dump waste material into a concrete bin for disposal. The stone is discharged from the steel bin on a 30-inch by 8-foot Traylor Sheridan 4-toggle grizzly having 4- by 5-inch rectangular openings. The plus-5-inch oversize rock drops into the No. 50 Straub Kue-Ken 24- by 10-inch balanced-type jaw primary crusher on the third floor of this building. The stone is reduced to minus-3-inches in size and is dropped on a Link-Belt pan conveyor which also handles the grizzly undersize. This in turn discharges the stone on a 4- by 8-foot Symons (Los Angeles) single-deck screen equipped with longitudinal rods spaced ½ inch apart.

The ½- to 5-inch oversize rock from the Symons screen goes to a trommel which has 1-inch openings and is equipped with washing sprays. The ½- to 1-inch rock passing through this screen goes to a second trommel with ¼-inch openings for further washing and removal of fines. A bucket elevator then feeds this stone on a short white-rubber picking belt-conveyor for the removal of any rock containing traces of black diorite which occurs in occasional small dikes in the limestone body. This black material is easily discernible against the white background. The selected stone is discharged from the conveyor into a car-loading bin. It is sold as rotary lime kiln feed and foundry flux.

The 1- to 5-inch oversize rock from the first trommel is carried by a belt-conveyor and a picking conveyor to a third trommel. This makes three sizes of stone which are discharged direct into individual bins. The 1- to 3-inch stone is sold chiefly as rotary lime kiln feed. The 3- to 4-inch stone is chiefly sugar rock. The 4- to 5-inch stone is sold chiefly as flux for open hearth steel furnaces but some is also sold to commercial grinding plants for the manufacture of paints, linoleum, putty, rice cleaner, roofing granules, etc.

The minus-½-inch material passing through the Symons screen is carried on a belt-conveyor to a second 4- by 8-foot Symons single-deck screen which has ⅜-inch openings. The material passing through this deck goes to a bin. Most of it is sold as smelter flux but some is also supplied to a beet sugar plant which uses it to "sweeten up" a sludge which is reburned for reuse in a special type of furnace.

The plus-⅜-inch material passing

The machine which removes excess minus-100-mesh dust from minus-16-mesh fine product.

over the second Symons screen is carried by a belt-conveyor to a bin. A belt-conveyor feeds this material from the bin to a Jeffrey hammer-mill from which it is then elevated to a Link-Belt single-deck screen with 16-mesh openings. The undersize from this screen, minus-16-mesh, goes to an American Air Filter Company No. 12 Type D dry Rotoclone which removes enough of the minus-100-mesh dust to keep the content in the finished product well below the 25 per cent. maximum permitted. The plus-16-mesh material passing over the Link-Belt screen goes to a Symons screen, also with 16-mesh cloth, and the oversize from this is carried on a belt-conveyor back to the Jeffrey hammer-mill for further reduction. The Rotoclone product and the minus-16-mesh material through the Symons screen drop into a bin as "sand" for glass manufacture.

These bins are timber construction, with a total capacity of 300 tons, and are arranged in two rows with the single car-loading track between them.

Most of the products made are in constant demand and little stock-piling is done. The demand for sugar rock, however, is seasonal, coming late in the year, and the stock-piling of this material is carried on the year around except during this season.

Officers of the El Dorado Limestone Company are J. H. Bell, president and general manager; H. P. Armes, secretary and sales manager. C. R. Nichols is mine superintendent.

Bureau of Mines Issues New Bulletin

The Bureau of Mines has issued a new bulletin on the development of the potash industry in the Permian Basin. It contains chapters on mining, crushing, calcination, and extraction of polyhalite for recovery of potassium salts, and on factors controlling the extraction and recovery of potassium and magnesium sulfates from polyhalite. It includes equilibrium data on the salt systems, detailed cost estimates of various extraction processes, a list of patents relating to the treatment of polyhalite, and many charts.

Authors of the bulletin are John E. Conley, chemical engineer at the Eastern Experiment Station of the Bureau of Mines, College Park, Md., and Everett P. Partridge, Pittsburgh, Pa., former supervising engineer of the Bureau's Station at Rutgers.

Copies of Bureau of Mines Technical Paper 459, "Potash Salts from Texas-New Mexico Polyhalite Deposits," are obtainable only through the *Superintendent of Documents, Government Printing Office, Washington 25, D.C., at 20 cents per copy.* They are *not* for sale by the Bureau of Mines.

How One Cement Company Solved Its Man-Power Shortage Problem

By D. E. KOCH

Superintendent, Giant Portland Cement Company

● This article tells how one company solved its man-power shortage problem in a "critical" area and met W. M. C. requirements for a reduction of its employment ceiling. It was prepared for publication in the March issue, but arrived too late to be included.—Editor.

another P and Q exclusive

THE Giant Portland Cement Company, being one of the smaller companies located in the Lehigh Valley, realized in the early Fall of 1943 that it was confronted with two grave problems: first, the anticipated reduction of cement shipments due to the government restrictions on private building, and the completion of the major federal projects along the Atlantic seaboard; secondly, the highly competitive man-power situation due to our geographic location in one of the most concentrated areas in the United States where about one-tenth of the vital war materials are being manufactured.

After careful consideration and meeting with our union as to how best to handle the situation, it was decided to adopt the 5-days-a-week program, shutting down Saturday and Sunday, resuming operations on Monday morning. This plan was put into effect in September of 1943, operating four of our six kilns. Through this reduced operating schedule we were able to eliminate the swing men on all shifts, together with one shovel and locomotive crew in the quarry and one complete raw-mill shift; also a few others here and there where it was felt we could get along without them. The net result was a reduction of 19 men. The lay-off was, in so far as practical, on a seniority basis.

In the latter part of February, 1944, it was obvious that the anticipated business would not warrant continuing on a 4-kiln 5-days-a-week schedule very long. A meeting of the foremen was called for the purpose of studying ways and means of a further reduction in operating force and production.

Our new plan called for a 2-kiln operation, but instead of operating 5 days per week the two 5-day periods were combined to run 10 days straight and down 4 days. Naturally, two shutdowns per month meant less wear and tear on the kilns and also represented a slight saving in fuel and kiln-lining costs. Generally speaking, the men liked the 4-day period off because it gave them greater opportunities to work around their homes and gardens.

With two kilns in operation the quarry was required to operate only every other week. Also, since the demand for cement was less, it was not necessary to run our finished-grinding department each week. Therefore, we planned to operate the finished-grinding department only during those weeks that the quarry did not operate. By this arrangement we were able to dispense with the usual labor and yard men, as the quarry men were used for labor one week, and the clinker-grinding crew as labor the other week, and so on. One shift in the raw-grinding department was sufficient to keep the two kilns in feed for 24 hours each day, therefore, we were able to eliminate one shift here. One well-drill crew was eliminated, some reductions in the shop, electrical and packing departments were made, two men from the laboratory and one girl from the office were released. The net reduction was 20 men and 1 woman. On this second lay-off each man was given a written leave of absence. Every six months the leaves are extended, thereby enabling us to keep in touch with our absent men.

By previous arrangement with the War Manpower Commission and the United States Employment Service the men were all interviewed on Saturday morning of March 25, 1944, at the plant. All but two had jobs to report to the following Monday morning. The following week of March 27 was taken for repairs and the remaining men were given vacations in order to eliminate the necessity of finding replacements if the men were granted vacations at scattered times throughout the year.

On May 15, 1944, the War Manpower Commission declared this area as "critical," therefore, it was necessary to go on a 48-hours-per-week schedule. This was accomplished by extending our operating period from 10 to 12 days. At this time we made a further reduction in our pack-house by reducing from three packing crews to one crew with two of the packers, due to seniority rights, going back to labor work. These two packers gave us auxiliary help for the regular packing crew on rare busy days.

By the end of 1944 we had produced but 4,000 barrels more clinker than cement sold and ground within 3,000 barrels of the clinker produced. This put us in excellent position to continue operations as we had not increased our inventories, but had kept in good balance.

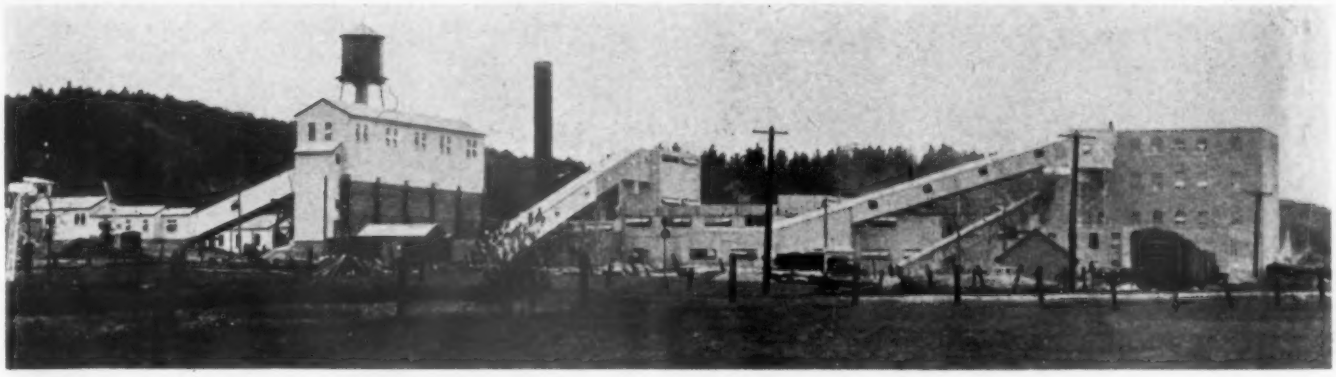
On January 1, 1945, the War Manpower Commission in Allentown asked for an inventory of all the men employed in cement mills in the Lehigh Valley. From this inventory the War Manpower Commission established new employment ceilings and asked for a certain percentage of men to be released for more essential work. In view of the drastic cuts previously made, we were finally asked to give up only 4 men. While no one particularly liked this condition, in less than one week the men were all placed in vital war work.

We are now operating the plant with only 60 per cent. of normal personnel. We have operated without a major shutdown in over two years. We have hopes that we will be able to continue operating on this basis and keep our record clear. This has been a big factor in keeping our men for they realize that management has made an honest effort to provide them with continuous work. However, nothing could have been accomplished without the combined coöperation and teamwork of the local union and each and every individual.

Fiber-Cement Homes For Guam Natives

Because Lieutenant Arthur L. Shepard, USNR, wrote his father, Professor John F. Shepard of the University of Michigan that he had been assigned to rebuild villages on Guam and that lumber had been allocated for another use, the war-destroyed homes will be made with a lightweight building board made of coconut fiber and cement. The formula for this new material was developed by the Department of Engineering Research of the university, and full information about it was airmailed to Lieutenant Shepard.

Vital Magnesia Is Made From Local Brucite in a Modern Canadian Plant



• General view of plant with crushing and screening buildings at left and final processing buildings at right.

BY *W. E. Trauffer*

another ON THE SPOT report

THE Aluminum Company of Canada, Limited has in operation at Wakefield, Quebec, a plant which is making vitally-needed magnesia from a local brucitic limestone which, until a few years ago, was thought to be of no commercial value. These deposits of granular brucite embedded in calcite were thought to be dolomite until 1937, when they were examined by M. F. Goudge, Mineral Technologist, Division of Industrial Minerals, Bureau of Mines, Ottawa. As there was then no source of low-lime magnesia in Canada, Mr. Goudge began to work on a process for separating the granular brucite in one of these deposits from the calcite in which it is embedded. In 1939 after exhaustive tests had been made of various methods of recovery, a pilot plant with a 22-foot kiln was put in operation which made over 20 tons of magnesia and proved Mr. Goudge's process to be of commercial value.

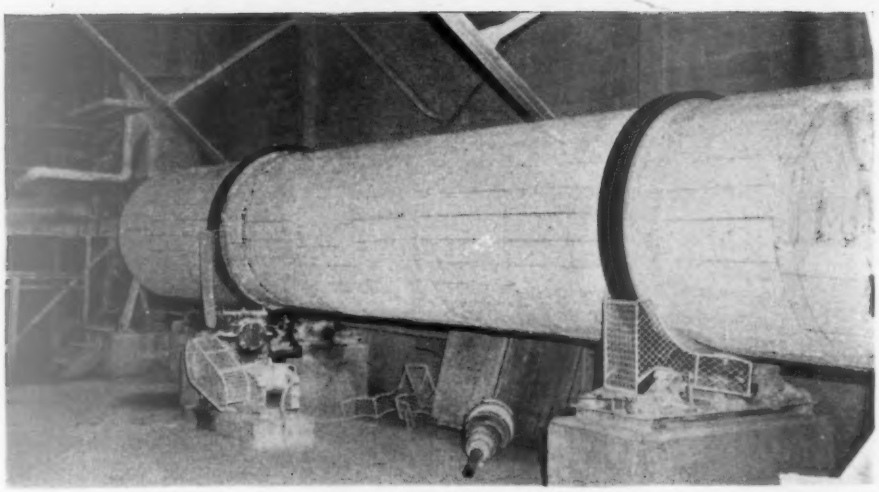
Due to wartime conditions high-grade magnesia from foreign sources became scarce while at the same time Canada's metal production increased rapidly, therefore it was decided to build at Wakefield a plant for the production of magnesia for refractories using Mr. Goudge's process. This plant went into operation in April 1942.

Briefly, the method used consists of calcining the rock, hydrating the calcined material in order to convert the lime matrix into finely-divided hydrate of lime, at the same time leaving the calcined brucite in its natural granular form. In this state the brucite is freed from the lime by screening, air separation and washing.

Three products are obtained. First, "brucite concentrates," containing 92 to 93 per cent. magnesia, which is sold mainly for the production of high-grade magnesite brick, but some of it also is used by the chemical trades. Second, "brucite fines," a material containing 65 to 70 per cent. magnesia in a form readily available in the soil. This is sold chiefly as a fertilizer ingredient, and

• Standing before the quarry face are: left to right, C. Burd, quarry superintendent; M. F. Goudge, Canadian Bureau of Mines; J. J. Gillis, plant chemist; J. H. Legg, works superintendent; F. E. Dickie, manager of brucite operations.

• The 1½-cubic yard shovel loading brucite into truck on one of five benches.



• The rotary steam drier which receives the dewatered product of the centrifuge.

is shipped in considerable quantity to the potato growers in the Maritime Provinces of Canada and in the State of Maine, as well as to the orange growers in Florida. Third, "hydrated lime," which is very pure except that it contains 12 per cent. magnesia. It is extremely fine, over 95 per cent. passing a 325-mesh screen, which makes it an ideal spray lime for agricultural purposes; about half is sold for this purpose and the other half to the building trades as a mason's lime.

The Wakefield area and the nearby valley of the Ottawa River are thought to have the only sizeable deposits of granular brucite in the world. It is thought that these deposits were formed by blocks of dolomite caught up in molten igneous granite rock, and that a differential calcination occurred which put the material in its present form with the brucite granules embedded in calcite as in this deposit, or in dolomite as in some other deposits in the Ottawa Valley. The rock strata are badly folded and there is considerable serpentine and diopside in veins, masses and grains. This makes hand picking necessary, either at the quarry or at the plant, and the latter is being done.

Selective blasting is being carried out whenever possible, and the undesirable stone is hauled off to waste. The deposit is now being worked from its outcrop on a hilltop in four 20-foot benches, and a fifth bench will be developed below these as the quarry is worked back into the hill. As at least a 400-foot depth of the best material is known to extend down from the present quarry level it is possible that an underground mine or open pit will later be developed.

In the quarry, wagon drills are used for primary and jackhammers for secondary drilling and standard blasting technique is followed. As the material is comparatively soft, no unusual drilling or blasting problems are encountered, and drilling

• The centrifuge which dewaters the product of the screw classifier.

speeds and blasting yields are high. The rock is loaded by a 1½-cubic yard Bucyrus-Erie 37-B shovel into dump trucks. These haul the stone about 3,000 feet to the plant where it is dumped into a hopper.

A 60-inch Stephens-Adamson "Giant" feeder discharges to a 42- by 48-inch Traylor primary jaw crusher. The minus 6-inch crusher rock is carried on a 30-inch belt-conveyor to a double-deck vibrating screen which removes the fines. The middlings and oversize from this screen are discharged into a surge bin from which a Jeffrey-Traylor vibrating feeder discharges them on a 42-inch picking belt which operates at a speed of 33 feet per minute. There are ten stalls for picking out undesirable rock, and the waste is discharged together with the fines from the first screening on a belt-conveyor to the waste pile where it is distributed by means of a mine car.

The good rock is discharged from this conveyor to a Link-Belt 2-deck vibrating screen. This has 4- by 5-inch wire cloth on the top deck and 2½-inch cloth is usually used on the bottom deck, but this is varied as necessary to spread the load between the secondary and tertiary crushers. The middlings and oversize from this screen are discharged into a 30- by 18-inch Allis-Chalmers secondary jaw crusher.

The minus 1¾-inch product of this crusher, with the undersize from the screen, is carried on a 30-inch belt-conveyor to a third vibrating screen which has only one deck. The plus 1¾-inch oversize is carried on an 18-inch belt-conveyor to the 20- by 18-inch Allis-Chalmers tertiary jaw crusher. The minus 1½-inch crusher product is returned to the screen.

The minus 1¾-inch screen undersize is carried on another 18-inch belt conveyor to an Allis-Chalmers "Aerovibe" 2-deck screen above the raw-material-storage bins. This screen has 1- and ½-inch wire cloth on its top and bottom decks respectively. The 1¾- to 1-inch oversize is discharged into two 250-ton bins, and the 1- to ½-inch middlings are carried on an 18-inch belt-conveyor to a third 250-ton bin.

The minus ½-inch fines from this screen are carried on an 18-inch belt-conveyor to another "Aerovibe" 2-deck screen. This has ½-inch and 8-mesh wire cloth on its top and bottom decks, respectively. The middlings and oversize from this screen go to separate 250-ton bins. The minus-8-mesh fines go to a waste bin

• The wet slaker and screen ahead of the screw classifier.

from which they are trucked to a pile and sold to farmers for correction of acid soil.

Each of the four different sizes of rock in these five bins is calcined separately. A movable feed hopper on a track feeds the rock to a 24-inch belt-conveyor from which a series of two 18-inch conveyors discharge it into the kiln-feed bins. The Hardinge Size "C" constant-weight feeders feed the rock into two 7½- by 152-foot F. L. Smidth rotary kilns.

Each of the kilns is fired with pulverized coal from Raymond direct-firing bowl mills. Pennsylvania or West Virginia high-volatile coal of low sulphur and ash content is received in cars from which it is discharged into a track hopper. A plate feeder is followed by a hammer-mill and an 18-inch belt-conveyor with a magnetic head pulley to remove tramp iron. Another 18-inch conveyor feeds the coal into two 40-ton mill-feed bins. The fuel consumption averages about 6,150,000 B. t. u. per ton of calcines. The rock burns more easily and rapidly than ordinary dolomite.

In calcining this material it is essential to have accurate and steady control of the kiln burning-zone temperature. This control is obtained by means of Leeds & Northrup "Ray-O-Tube" radiation pyrometers with also indicating pyrometers with thermocouples located 50 feet and 70 feet back from the firing ends of the kilns and in the dust chambers. A complete F. L. Smidth centralized control board is used, and on it are mounted other instruments including automatic gas analyzers, draft gauges, meters, switches, etc.

Induced draft is used on these kilns and the flue dust and gases pass through dust chambers before entering the two 150-horsepower fire-tube waste-heat boilers. The gas temperatures are about 920 degrees F. entering and 320 degrees leaving the boilers, and only enough steam is generated to operate the steam-heated drier and to heat the plant and offices. The low kiln-exit-gas temperature is due to the cooling effect of the water of combination in the rock.

Following the two boilers are two 14-foot diameter by 22-foot high Norblo cyclones with individual draft fans. The fans blow the gases and the remaining dust through a 12-foot diameter by 24-foot high Norblo scrubber tower which uses 160 g.p.m. of water. The gases are exhausted through a stack and dust slurry goes to a waste disposal pond. These scrubber towers were originally constructed of steel sheets with iron-pipe spray manifolds, but due to corrosion by sulphur acids it became necessary to rebuild them with Douglas fir and fit them with 3S aluminum spray manifolds and gas-intake pipes which seems to have effectively cured the corrosion trouble.

• The continuous "dry" hydrator with its feeder above. Wet hydrator or slaker is in foreground.

The calcined material is discharged from the kilns to a pan conveyor followed by a bucket elevator which carries it to a 6- by 60-foot rotary cooler. Belt-conveyors carry the cooled calcines to a storage bin. A Hardinge Style "C" constant-weight feeder feeds the calcines into a Kritzer No. 10 continuous hydrator which makes a dry hydrate. This is carried by a bucket elevator to a scalping screen which removes the plus ¼-inch material consisting of any burned rock and clinker. The undersize goes to a 14-foot-diameter Gayco separator which extracts the hydrated lime in the form of fines from the brucite. A bucket elevator carries the lime to a storage bin from which it can be loaded out for bulk shipments or spouted to a Valve Bag packer for shipment in 50-pound paper bags.

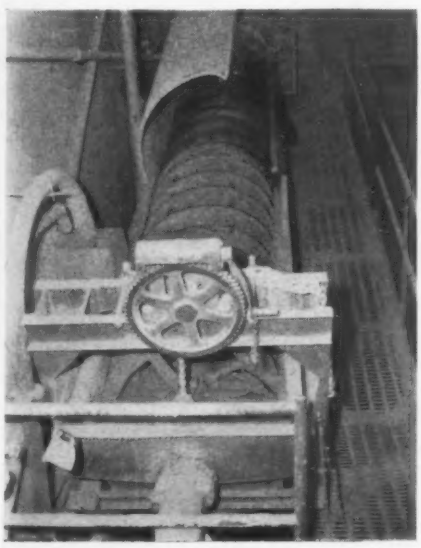
The coarse material from the separator is substantially dehydrated brucite still in the granular form, but requires considerable purification and treatment before it is ready for use. It first goes to a 6½ foot-diameter Kilby wet hydrator or slaker and the slurry from this is fed by a 2-inch Wilfley pump to a 36-inch by 18-foot Colorado Iron Works Akins screw classifier. The coarse material from the classifier passes over a wet screen and the oversize to a Bird centrifuge for dewatering.

The overflow from the classifier, the fines from the screen, and the fines from the centrifuge all flow to a pump and are sent to the tailings pond.

The dewatered product from the centrifuge goes to a Louisville rotary steam drier. A bucket elevator discharges the dried material to a vibrating screen which separates the plus-28-mesh "brucite concentrates" from the minus-28-mesh "brucite fines."

These materials are stored in overhead loading bins from which they can either be spouted to top-loading freight cars or sent to the bagging machine for packing.

Since this is largely an experimental plant the operating records kept are unusually complete as is

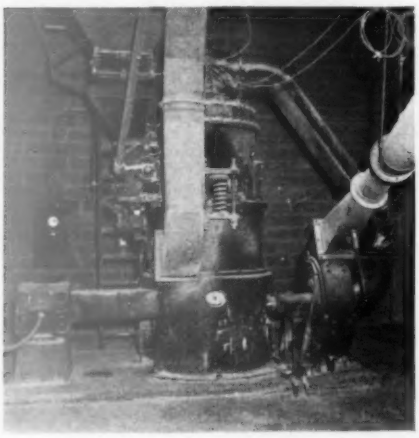


• Left: The screw classifier which follows the slaker and precedes the centrifuge in the flow.

• Right: The mechanical separator which receives undersize calcine from screen fed by elevator at left.

the chemical control of the process. Automatic sampling machines are installed at all stages of the process, and periodic reports show losses and recoveries at various points.

An interesting feature of construction is that the plant is located in an old glacial valley with an unstable clay bed 100 feet thick which has



• One of the direct-firing bowl mills for the two rotary kilns.

a soil bearing value of only 3,000 pounds per square foot. In designing the foundations a working value of 1500 pounds was used. The two kilns are supported on separate floating blocks of reinforced concrete each 150 feet long, 12 feet deep, and 10 and 12 feet wide at the top and bottom respectively.

The crushing department is built of wood, the kiln building is structural steel and corrugated metal and most of the other buildings are of steel-frame and concrete-block construction.

• The cyclones and scrubber tower which remove dust from the kiln gases.

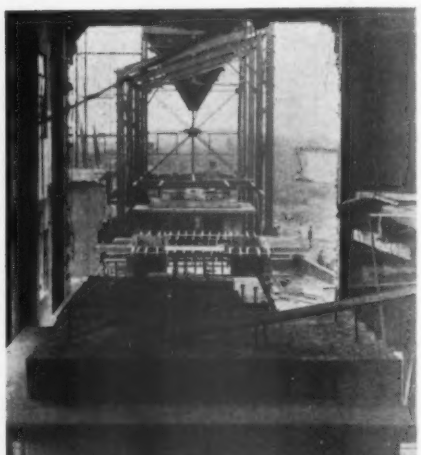
The plant is amply provided with the safety and comfort features ordinarily installed by the company in all its plants, including automatic sprinklers, chlorinated water, modern wash and locker rooms, a first-aid room and a system of exhaust fans for the removal of dust. The safety record is good; in 1944 there was only one lost-time accident.

The plant is located on the Gatineau River, 18 miles north of Ottawa, on the Canadian Pacific Railway's Gatineau Valley line which serves the lumber, pulpwood and power area to the north.

F. E. Dickie is manager of brucite operations, J. H. Legg is plant superintendent, J. C. Burd is quarry superintendent, and J. J. Gillis plant chemist.

Maine Cement *(from page 63)*

of reinforced concrete, with the walls of the drier building 6 inches thick, the wall of the tower 10 and 12 inches thick, reinforced with 24- by 24-inch pilasters and interior beams.



• View toward new burner floor showing the three new kiln piers under construction.

The drier building was first removed by demolishing the walls with a demolition ball, and letting the roof fall of its own weight. The tower was then tipped over toward the south, where it was out of the way and could be broken up later.

To tip this structure was an interesting problem. It was figured that by dropping one side 5 feet it would become unbalanced and roll over. The walls were removed between the pilasters from the ground level up eight feet and hard pine 12- by 12-inch timbers were placed in the south wall to support the building while the pilasters on the south were removed. When this was done the building stood on eight timbers on the south and on three pilasters on the north. The timbers were then dynamited, allowing that side to drop eight feet, and the building rolled over, landing on the desired spot.

No changes have been made in the raw feed to the kiln except to install a belt-conveyor to combine the discharge of both filters into a single feeder. Each filter had a degree of reserve capacity for one kiln but neither had enough to feed the new kiln. It was therefore necessary to leave the ferris-wheel feeders and filters intact as originally installed and to synchronize the ferris wheels and arrange to have them operate from a common source on the new kiln drive.

The capacity of the two kilns as originally installed was 100,000 barrels of clinker per month. It is anticipated that the new kiln will produce 75,000 barrels per month with a reduction in coal consumption of about 25 pounds per barrel.

F. L. Smidth & Company was retained as consultant and A. C. Stanley Company was the contractor. The plant is expected to resume operation early in 1945.

Construction Value On Upswing in February

A slight increase in the dollar volume of construction contracts awarded in the thirty-seven states east of the Rocky Mountains during February as compared with the corresponding month of last year was reported by F. W. Dodge Corporation. The total was $146,957,000 that month as compared with $137,246,000 in February, 1944.

Substantial increases in nonresidential building, especially structures used for manufacturing purposes, hospital and institutional building, and commercial structures, were reported during the month.

Residential building construction continued at a very low ebb, contracts last month for such purpose amounting to only $19,300,000 in the states east of the Rockies.

The New England states, Ohio and Kentucky areas, southern Michigan, Minnesota, the Dakotas, and Texas showed marked increases as compared with the corresponding month of last year.

Consolidated Rock Lists 120 in Service

The latest tabulation of former employees of the Consolidated Rock Products Company, Los Angeles, now in the armed forces contains a total of 120 names. Three men—O. W. Belville, Manuel Camarena, and Thomas Fennell—have been killed in action, four are listed as missing in action, and two others are prisoners of war.

Developments in the Manufacture of Better Refractories for the Portland Cement Industry*

—By LEOPOLD TSCHIRKY
General Refractories Company

Part Five

another P AND Q exclusive

HAVING covered the service conditions refractories are subjected to in the various zones of a cement kiln and many of the factors to be considered in choosing the refractory to line these zones, it is good now to give some consideration to the manner of installing linings. This involves, among other things, the shape of the bricks to be used.

Reference has been made to the special shapes used for discharge-end blocks and feed-end blocks, but it is good to repeat that these should be as simple in design, and as small as practical, as the governing factors permit. Some cement plants might also do well, when faced with the necessity of changing or repairing kiln discharge ends, to give consideration to the possibilities of doing so in a manner that would permit the use of standard kiln-liner shapes right to the very end of the kiln.

Standard Kiln Blocks.—For the kiln proper kiln blocks as shown in Figure 18 have come to be accepted as the conventional standard design for fire-clay bricks, super-duty fire-clay bricks and high-alumina bricks.

*Presented before the Technical Committees, Portland Cement Association, September 19, 1944.

In a few instances designs differing from these are used. In such cases the blocks usually differ in either the radial thickness or the thickness which, when installed, falls parallel to the kiln axis. At times there may be, and probably are, good reasons to deviate from the conventional standards, but, unless this is so, it is conceded to be good practice to confine oneself to standard sizes so far as is possible. As sizable stocks of standard-size kiln blocks are generally carried by the refractories manufacturers, this makes for

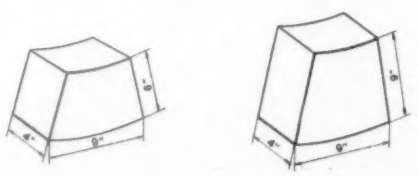


Figure 18.

quicker deliveries when urgent requirements face the consumer. It makes possible lower inventories in consumers' plants. In some cases it will result in a lower first cost of lining not only for the same thickness of lining the special blocks would form, but also, in some cases, strange as it may seem, for lining of greater thickness than the special blocks will form.

Some plants follow the practice of laying these blocks in rows parallel to the kiln axis, as shown in Figure 19. The procedure most usually followed, however, is to lay them so that the blocks in one circle break joints with the blocks in the adjacent circles, as shown in Figure 20. From the standpoint of maximum rigidity in the finished linings the latter procedure is preferred.

Basic-Brick Lining. — For basic-brick linings the bricks used are arch shapes, as shown in Figure 21. There are very good reasons why the bricks used for basic-brick linings are arch shapes instead of the conventional kiln blocks just described as conventional standard shapes for fire-clay brick, super-duty fire-clay brick and high-alumina brick linings. The manufacturing process employed in

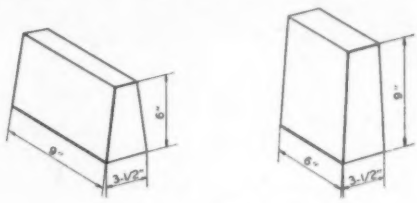


Figure 21.

the manufacture of basic bricks presents problems differing in some respects from those encountered in the manufacture of fire-clay bricks, super-duty fire-clay bricks and high-alumina bricks. These problems are of a nature that make it possible to incorporate the desired characteristics a basic brick must possess to greater degree in such arch shapes. Furthermore, basic bricks are laid up in the kiln with a thin metal plate between adjacent bricks. These metal plates serve a very definite function in a basic-brick lining and, for all practical purposes, can best do so if laid in the radial joints between arch-shaped bricks rather than, as would be necessary if conventional rotary blocks were used, in

Figure 19.

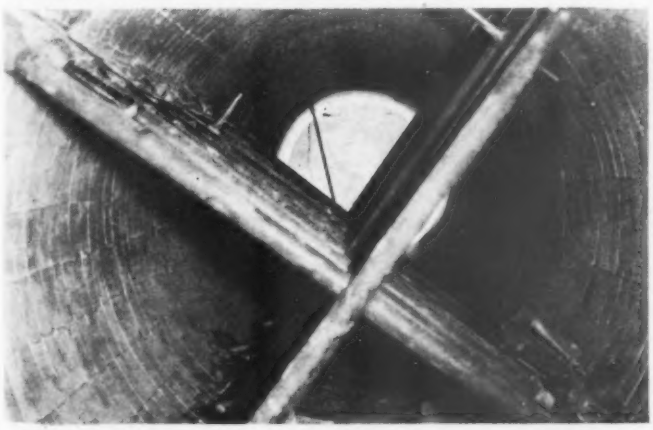


Figure 20.

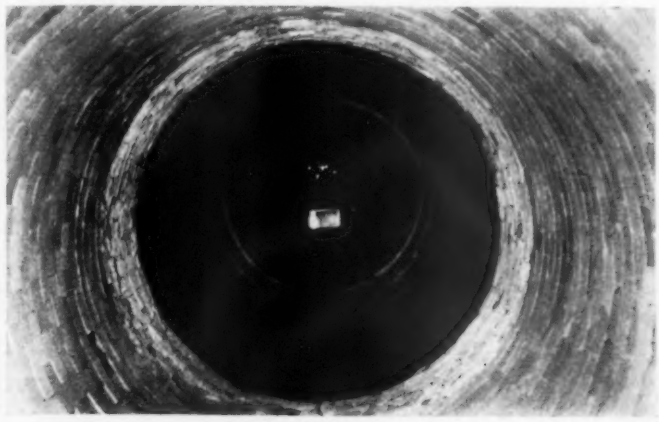


Figure 22.

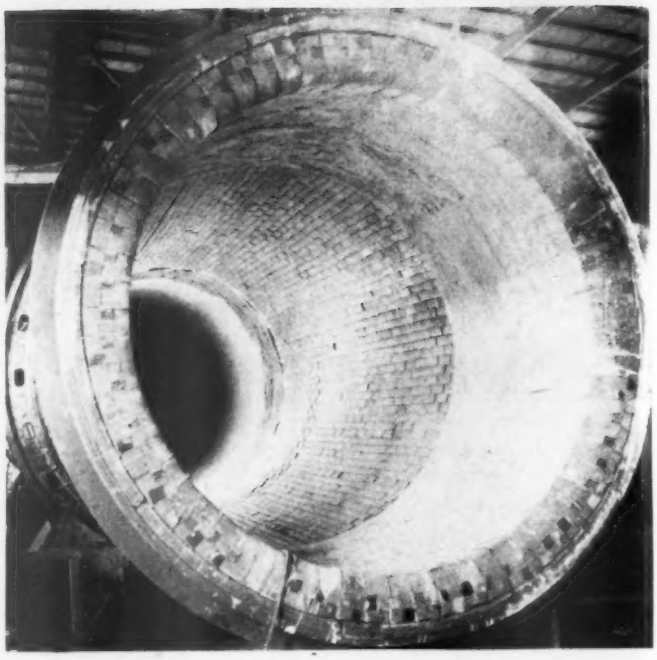


Figure 23.

the joints falling perpendicular to the kiln axis.

The preferred manner of installing basic-brick linings is illustrated in Figure 22. Here it will be seen that the lining is made up of a series of straight circles, each circle being altogether independent of the adjacent circles. Whether or not the bricks in one circle break joints with the bricks in the adjacent circles is immaterial. That these linings are made up of straight independent circles, instead of having interlocking bricks that break joints in the horizontal direction, is altogether a practical consideration brought about by the use of metal plates in the radial joints. It would be an extremely difficult task, requiring a tremendous amount of cutting, to lay properly an interlocking basic-brick lining in a shell that is not a perfect cylinder. As basic bricks are rarely used until after it has been demonstrated that even high-alumina brick linings are not good enough, it is easy to see that it would be a rare instance indeed to find the shell of a kiln that already has had difficulty with other lining materials and still is a perfect cylinder. A further important factor in favor of straight circles is the matter of ease of patching when only a small repair is to be made to the lining.

Arch-Shaped Blocks. — Recently there has been a trend on the part of a few cement plants toward a change from kiln blocks as shown in Figure 18 to arch shapes as shown in Figure 21 for linings of fire-clay brick and high-alumina brick. While this trend from conventional rotary-kiln blocks to arch bricks is of rather recent origin in cement plants in the United States, the use of arch bricks is not by any means new to the cement industry as a whole. Arch bricks have long been used by many cement plants in foreign lands. The experience of one refractories manufacturer, who over the years has furnished refractories to cement plants in many parts of the world, has been that of the foreign cement plants that changed from arch shapes to the conventional rotary-kiln block shape very few changed back to the arch shapes so long as American-made kiln blocks were still available to them. Unfortunately, comparable service data in foreign practice have not been made available, and so a comparison of results on linings of one design versus the other, under comparable operating conditions, in United States practice will be followed with considerable interest by the cement manufacturer and refractories manufacturer alike. In the short time the trend has been in progress the reports from users vary considerably. Some seem to be pleased with the change and others have returned to the use of the conventional standard rotary-kiln blocks (Figure 18).

The question is sometimes asked whether, when arch shapes of fire-clay bricks or high-alumina bricks are used, the lining should be laid up in straight circles in the manner followed with basic bricks, as illustrated in Figure 22, or if they should be laid up in horizontal rows and with the bricks in one row breaking joints with those in the adjacent rows, as illustrated in Figure 23. Here theory and practice sometimes clash. Theoretically, it would be desirable to lay the bricks breaking joints in the horizontal direction. If carefully laid, this would be a step in the right direction for maximum rigidity in the lining, and the interlocking construction could also be expected to offer greater resistance to the tendency of pieces of cracked or spalled bricks falling away from the lining. It is not overly difficult to lay a tight lining, with bricks breaking joints in the horizontal joints, if the shell is a true cylinder and the arch bricks run uniform in size. But the result experienced by some who have done so has been that arch bricks so laid have a tendency to crack rather easily in the middle (possibly due to torque), somewhat as illustrated in Figure 24. Such cracking finally results in a condition approaching individual circles of about the same horizontal thickness as would be formed had conventional standard kiln blocks been used to begin with, but with the disadvantage of having about double the number of pieces in the circle.

Realizing how very few kiln shells that have seen severe service are perfect cylinders, and keeping in mind the allowable dimensional variations that occur in commercial brick manufacture, and also that well-laid interlocking brickwork has shown a tendency for bricks to crack in the middle, it is the opinion of several that the best average results, when arch shapes are used, will be obtained from linings that are tightly laid up with the brick forming indi-

vidual straight circles (Figure 22).

Regardless of what design of lining or brick shape is used, it is extremely important that all possible care be exercised to lay up a good tight lining. This can not be stressed too strongly. It can be just as important a factor, in so far as ultimate life of the lining is concerned, as is the proper selection of refractory material to form the lining. The temptation is so great to rush a lining installation when replacements must be made during a run that, unless those charged with the actual brick-laying are impressed with the importance of good workmanship and are given sufficient time to do a good job, a poor installation can easily be the result. What may seem like time saved in making a rush installation usually carries heavy penalties in the end.

All this becomes doubly important when installing linings in kilns that have bulged shells, and very few kilns that have seen considerable service do not have bulged shells. It is obvious that bricks made to turn a circle can not be expected to fit properly a surface that has lost its circular shape, unless suitable compensations are provided. This may require cutting or trimming bricks to fit, or it may be taken care of—as is done in some plants—by having a few blocks on hand for diameters larger and smaller than the original kiln diameter.

Rarely can a circle of bricks be closed with a full brick. When that does occur, it is purely a matter of good luck. Too much care can not be taken properly to cut and fit the key brick. Unless this is done the care that may have been taken to lay up the rest of the lining properly is largely wasted effort. Too small a key brick is not to be recommended. The preferred key brick is one with a chord dimension not less than one-half the chord dimension of a full kiln block. This often requires cutting the key brick and also one or two of the bricks between which the key brick is to fit. The amount of cutting required can be minimized by having on hand a few bricks that were made with chord dimensions smaller than those of the full brick. With such bricks on hand combinations can be worked out to result in very little cutting or trimming on but one brick. Here, however, it should be emphasized that these extra bricks are not intended to eliminate all cutting or trimming, but are simply and solely for the purpose of minimizing the amount of cutting that will be necessary.

Also, rarely (except by good luck) can a length of old lining be replaced with new bricks without the need of either some cutting or filling in between the last row of new bricks laid and the old brickwork remaining in the kiln. Here, too, it is recommended that bricks be cut to make a tight fit, and this cutting can often be minimized by having on hand a supply of "split" kiln blocks made of thicknesses differing from the thickness of the standard blocks.

Small cuts, if not too many, can be made with a brick mason's hammer or with a small pneumatic brick-cutting tool, but if many cuts are required—and unfortunately this most usually is the case—a brick-cutting saw is an excellent item to have in the bricklaying equipment.

It is preferable that linings be laid dry, and as short sections are finished to apply a thin grouting mix to fill up any openings that remain between bricks and between the bricks and kiln shell. If the lining is properly laid to begin with, little grouting material will be required. It should be kept in mind in this connection that grouting should be used simply to finish off the lining and not for the purpose of trying to compensate for deficiencies in the lining procedure.

It is true that the refractory manufacturer has a responsibility to fulfill to furnish bricks that run reasonably true to specified size, and this fact is not being overlooked and must not be minimized. But regardless of how close his product conforms to allowable tolerances, and even if the bricks used were absolutely true to specified dimensions, the above-outlined care and compensations would still be necessary.

It has been noted in some recent installations of new kiln equipment, especially so when kilns of large diameter were installed, that the initial linings gave longer runs than replacement linings made of the same refractory material. So far as can be ascertained, the only difference in over-all conditions was that the initial linings were installed without need to hurry, whereas the replacements were made in the middle of runs. Ordinarily one would expect shorter life on the initial linings due to the many things that can, and usually do, happen that could easily have a damaging effect on linings during the period in which a new plant settles down to normal operation. While it is agreed that life obtained on the very first lining installed in a brand new installation is no criterion of future

Figure 24.

Figure 25.

life expectancies, nevertheless, these experiences, coupled with a knowledge that care exercised in lining a kiln is definitely desirable, raise the possibility that some interesting information might be obtained if a record were kept on lining life from linings installed under most favorable conditions as compared with lining life obtained from linings installed under the pressure of rush conditions.

Methods of Installation.—There are three methods of installing linings in a rotary kiln:

1. The "stick method." This method consists of laying up the bottom half of a circle of bricks and propping up with sticks the bricks as they are laid in the upper half of the circle. The key brick is then driven in at the top of the circle. This probably is the oldest method known. It is not to be recommended except in very small diameter kilns where there is not sufficient space to use any other method.

2. The "arch-form method," a typical example of which is shown in Figure 25, consists of laying up sections halfway up the sides of the kiln, after which a built-up form is used around which the upper half of each circle of bricks is laid. As each circle is completed, the form is moved ahead to the next circle and the procedure repeated. This method of laying kiln linings is not often used, although if carefully employed it provides a good installation.

3. The best, and most generally used, method of installing linings is what is known as the "screw-jack method." This method consists of laying up sections in the lower part of the kiln to points above the kiln axis, then carefully placing reason-bricks on each side and applying sufficient pressure against these timbers by means of "screw jacks" to permit turning the kiln without any chance of slippage, or collapsing, of the section of brickwork that is "jacked." Figure 26 illustrates a lining with "jacks" in place. The "jacks" are made of metal pipe provided at one or both ends with a screw jack. For small kilns, 8 feet in diameter or under, one screw jack is sufficient on each "jack." For larger-diameter kilns it is preferable to have a screw jack at each end of the "jack." Also, when a screw jack is placed on each end, it is desirable to have one with right-hand thread and the other with left-hand thread so that in tightening or loosening the "jack," the jack-pipe itself is turned and in so doing the two ends either expand or contract. Such double-ended "jacks" can be tightened or loosened by means of a large Stillson wrench. It is better still to have the jack-pipe heavy enough that holes can be drilled through it at right angles at about the center into which a heavy bar can be inserted to use for turning.

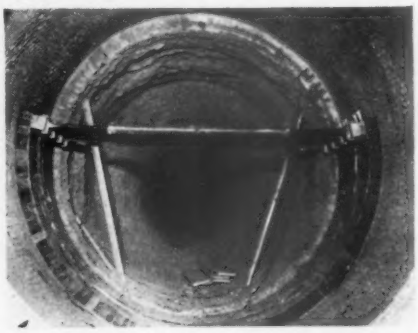


Figure 26.

The proper "jacking" of a lining is a very important feature in the proper lining of kilns. It is such an important feature that one will do well to give real thought to the design and construction of "jacks." It is desirable to build them so that the pipe, thread-bushing and screw jacks are all in one piece, also to provide the ends with bearing plates so attached that they can rest flush and firmly against the timbers against which they are to rest. Anyone who has had occasion to use improvised "jacks" that sometimes are provided will fully appreciate this.

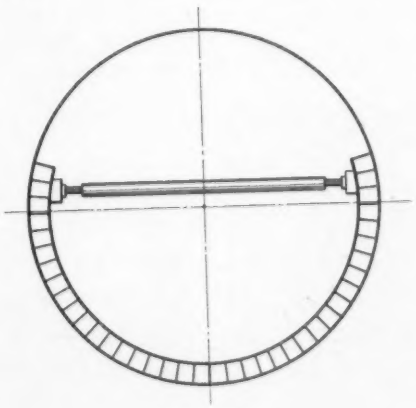


Figure 27.

Sufficient bricks should be laid up so that the "jacks" when first installed will be above the axis of the kiln, as illustrated in Figure 27. Laying 56 or 57 per cent. of the complete circle will be found satisfactory. This will leave the inner faces of the top bricks in planes that are not at right-angles to the direction of the pressure exerted by the "jacks." It is important that provision be made to compensate for this. Unless it is compensated for the tendency will be for the bricks under the jack timbers to rise and cause an opening in the joints between these bricks and those under them. This can be cared for in one of several ways. One very excellent and positive way to do this is to use jack timbers that are cut to proper taper.

Life of Kiln Linings.—But even though a wise choice of lining refractory has been made, and every possible care has been taken to install it properly in the kiln, how can one account for the variable results that so often occur?—variable not only from plant to plant, but also very often in the same kiln in the same plant. And, is there anything that can be done about it? These are natural questions to ask. The answer, at any rate the best one advanced so far, is that no two runs, whether on the same kiln or not, are made under exactly identical operating conditions. There is much that occurs in a kiln that can, and does, have a very definite effect on refractory life. Large and bulky as most kilns are, they, nevertheless, are just as sensitive to damaging influences on the refractories as are any other severe service furnaces. We have seen, all too often, the effect on lining life due to changing conditions of fuel and combustion, variation in load material in regard to volume and analysis, intermittent service versus steady runs, and numerous other items, not the least of which, by any means, is the human element. If all these could be coördinated into a balance that would produce maximum lining life, and if that balance could be maintained day in and day out, week in and week out, month in and month out, year in and year out, not only by the cement manufacturer but by the refractories manufacturer, too, then, and only then, would most of the present variables in refractories life disappear. While advances are constantly being made in that direction, we are still far from reaching such a condition and, so, the best we can do is to try to obtain the best possible results from the refractories that are available.

Editor's Note:
The next article by Mr. Tschirky will conclude this interesting and informative series on a subject that is of great importance to the technical men engaged in cement production.

Vancouver Plants Integrate Daily Output Despite Different Processing Methods

another ON THE SPOT report

WITH a combined daily output of 2,500 cubic yards, the two plants of the Deeks Sand & Gravel Company, Ltd., of Vancouver, Canada, are unique, inasmuch as the operating methods used at each of the plants are different. The smaller of the plants, located across Burrard Inlet, is hydraulic and produces 500 cubic yards in an 8-hour shift; the larger, 20 miles from the city, at Coquitlam, has an output in two 8-hour shifts of 2,000 cubic yards and is a "dry" plant.

By H. F. HAMILTON
General Manager,
Deeks Sand & Gravel Company
and W. A. ROBERTSON

Monitor sluicing out material in west pit, Seymour plant. Overburden is not stripped.

The hydraulic, or Seymour plant, obtains its water supply from Seymour Creek through an intake 12 inches in diameter. The pump is a Drysdale (English) run by a 200-horsepower Allis-Chalmers electric motor. About 15 per cent. of the initial 100 pounds per square inch pressure is lost in pumping through a ¾-mile, 12-inch wooden pipeline to the 4½-inch-nozzle monitor sluicing in the pit about 400 yards from the plant.

Thirteen wooden flumes—3 main and 10 feeder—are laid at an average 6 per cent. gradient to the plant, and are 12 inches wide and 14 inches in depth. No stripping away of overburden is done; what little overburden there is goes through the plant and is carried away in the wastewater flume.

Boulders too large for the flume formerly were an expense-creating problem, their removal necessitating three men working ahead of the monitor in the pit hauling out the boulders with wheelbarrows. Each boulder cost 20 cents in labor to clear out by this method. However, in July of last year a device, originated by Howard Steele, mechanical supervisor, for the purpose of eliminating expensive hand labor from this operation, was set up and at once proved itself to be successful.

It might be called a type of scraper, as can be seen by one of the illustrations. The bucket—powered by an old steam donkey with a 3-ton straight-haul capacity—is run out on a cable to the area where the monitor is sluicing. There it is lowered and scraped along the base of the pit wall until loaded, mainly with boulders. Hauled back, it is automatically tripped on a steel-bar grizzly of 80-pound rails—9½-inch spacings—set over the flume. The "throughs" go on down the flume while the "rejects" roll into a pit car which, when fully loaded, is hauled along the narrow-gauge track by a cable and dumped out of the way. Besides preventing flume clogging, this bucket device clears a track for the monitor to work in and speeds up the sluicing out of the stone, sand and gravel.

However, the 9½-inch clearance between the grizzly bars is a little too much and it is planned to adjust it to reject boulders over 7½ inches. The bucket itself was designed by Mr. Steele and built in the city to his specifications.

The wash-down is dredged out of the sump at the foot of the converging point of the flumes by a Mundy crane fitted with a 1½-cubic yard Williams clamshell bucket and powered by a 50-horsepower electric motor. The clamshell lifts the material to a hopper at the top of the plant. Coming through the hopper, everything over 2½ inches is rejected and shot down a chute to a 19-by-24-inch Hadfield jaw crusher powered by a 60-horsepower Allis-Chalmers electric motor. The crushings flow out on the ground at the edge of the sump, where on second handling

Seymour plant, almost end-on, looking down from edge of pit. Clamshell bucket is loading top hopper.

Loading scow with flexible-nozzle chute at the Seymour plant.

the clamshell hoists them to another hopper situated below the first. From there they are fed to the Donald revolving rock screens below the similar sand-and-gravel screens.

Material rejected on the 1¼-inch screen drops to a Symons 36-inch disk crusher, whose product is lifted with a bucket line to the screens, where of course anything still over 1¼ inches comes back to the disk crusher.

The material in this plant is so thoroughly washed in the flume that little additional screen washing is necessary.

Water for washing on the screens is obtained through an 8-inch wooden pipeline from McCartney Creek about ½ mile distant, and is

Donkey used for powering clean-out bucket in the pit.

fed up to the screens through a 4-inch iron pipe.

Blending is done on the 30-inch conveyor belt running below the bins, which have a total capacity of 1200 cubic yards. The conveyor is driven by a 30-horsepower Canadian Westinghouse electric motor, the screens by a Canadian General Electric motor of 15 horsepower. Coming above the ground level, the conveyor belt, roofed over, runs up to the loading hopper and feeds a cross belt driven by a 5-horsepower Canadian Westinghouse motor and running out to a flexible-nozzle chute. Scows in the channel—dredged in ¾ mile from Burrard Inlet—are loaded from the chute. While loading operations are being carried out, one winch swings the chute from port to starboard, another moves the scow fore-and-aft. The cross belt is reversible for feeding the hopper, from which transport and yarding trucks are loaded through a side-chute on the landward side.

The company has a 3-ton Ford truck and a Chevrolet truck of similar capacity for stock-piling. The marine equipment consists of a 55-foot tug, powered with a 100-horsepower Fairbanks-Morse Diesel engine, and five 250-cubiv yard capacity scows. The water haul to retailers' bunkers in Vancouver is 12 miles to False Creek and 8 miles to Coal Harbor.

The waste-water flume parallels the channel and empties into a sump equipped with a sand ejector (powered with a Canadian General Electric 25-horsepower electric motor) developing 50 pounds per square inch pressure and pumping salt water from the channel. The waste water is pumped to the tide flats through a 10-inch wooden pipeline.

Eleven men are employed here. The superintendent is T. O. Burgess.

In common with the Coquitlam plant the run of material produced is as follows:

Crushed Rock: (a) 4- to 6-inch rock "overs" for road base; produced when the rock bins are full.

(b) 2½- to 1¼-inch.
(c) 1¼- to ¾-inch.
(d) ¾- to ½-inch.
(e) Screenings—½-inch to rock dust.

Gravel: (a) Paving or "grain" gravel—2½- to 1¼-inch.

(b) Pea gravel—1¼- to $\frac{7}{16}$-inch.
(c) Torpedo—$\frac{7}{16}$- to ⅛-inch.
(d) Birdseye—⅛-inch to coarse sand.

Rear view, Seymour plant. Large "shack" in center houses a 50-horsepower electric motor to power clamshell.

Sand: (a) Concrete sand (coarse).

(b) Plaster sand (fine).

Main Blends: (a) "Navy-jack" (concrete aggregate)—55 per cent. 1¼-inch gravel, 45 per cent. coarse sand.

(b) Cover stone, for flush coating—Torpedo and Birdseye.

(c) Railroad ballast rock—2½- to ½-inch.

(d) Fill—2½-inch down to and including sand (bunker-run material).

(Of course, it is understood that many of the jobs require mixes made to meet individual specification.)

At the Coquitlam plant a Bucyrus-Erie 40 tread-mounted dragline-equipped with a 1½-cubic yard Page bucket and powered by a 100-horsepower hoist motor, a 40-horsepower swing motor, and a 2-horsepower drum-clutch air-compressor motor—all Canadian General Electric motors—scoops material from the pit and dumps it on an 80-pound steel-rail bar grizzly with 14-inch spacing, mounted atop a 40-cubic yard wooden hopper (constructed by plant workmen) at the top side of the pit. The hopper discharges into the two 5-cubic yard cars running on a narrow-gauge track and drawn by an American locomotive, powered by a 26-horsepower gasoline engine, for the 200-yard haul to the plant.

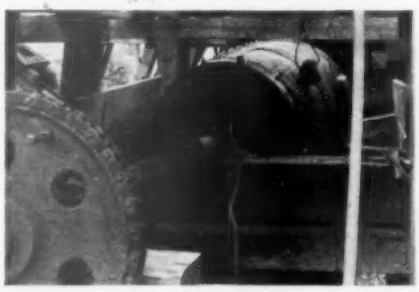
The cars unload on a charging platform into a wooden hopper from

Clean-out bucket dumping onto a steel bar grizzly.

which the material passes to a manganese-steel "home-made" multiple-disk-type rotary grizzly (made by the Vancouver Engineering Works), which rejects material over 7 inches in size. The rejected material is fed into a 19-by-24-inch Hadfield jaw crusher, powered with a 60-horsepower Allis-Chalmers electric motor, which discharges on either a conveyor belt leading to the rock plant or the main conveyor belt—carrying also the "throughs" from the grizzly—leading in the opposite direction to the sand-and-gravel plant.

Everything rejected on the 2½-inch manganese-steel Donald conical revolving screen at the sand-and-gravel plant is shot down to the 36-inch Symons disk crusher, powered with a 30-horsepower Allis-Chalmers electric motor. (The crushers and motors at the two plants are identical and interchangable). The disk crusher discharges on a conveyor belt leading up to two chutes —one dumping on the main conveyor belt, the other on the belt leading to the rock plant. Thus, the product of the disk crusher may be sent back to the main plant, or across to the rock plant for screening and storing.

Water for washing on the revolving conical screens at the sand-and-gravel plant is pumped to the plant through an 8-inch pipeline from a sump in a near-by low-lying area. A waste-water flume carries back to the sump. In hot weather this supply is inadequate and it is necessary to connect with the city water supply. Eventually, however, it is planned



Chain-driven rotary sand screen, Canadian type.

to enlarge the sump to handle year-'round requirements.

At the two sections of the plant a 15-horsepower electric motor turns the screens and one of 20-horsepower operates the conveyor belt. Both motors are made by Westinghouse.

The sand-and-gravel bins hold 1,200 cubic yards, and blending is done in the bins. The rock bunkers store 450 cubic yards. Material passing over the screens at the rock plant is fed into a special bunker, loaded into yarding trucks, hauled up a ramp and dumped on the

The 1½-cubic-yard clamshell bucket for haulage to hopper.

main conveyor belt for further crushing by the disk crusher. These yarding trucks are used at either the Seymour plant or the Coquitlam plant as required.

A standard-gauge railroad track is laid under the sand-and-gravel bins. Four 40-cubic yard capacity cars are loaded here from chutes and hauled two miles to the Canadian Pacific Railway main line by a 150-horsepower Vulcan gasoline locomotive. Transport and yarding trucks are loaded under the sand-and-gravel bins also. The rock bunkers discharge through side chutes into trucks.

On occasion the dragline is taken down from the pit for stock-piling. Up to 25,000 cubic yards may be stock-piled at present.

A portable loader, built by the company with a Fordson tractor as the foundation, loads trucks from stock piles at the rate of a cubic yard a minute. When a great deal of stock-piling is being undertaken, additional trucks are rented.

Rock plant, Coquitlam. The bunkers hold 450 cubic yards.

Cars from pit hopper unloading on charging platform into hopper.

Last year the company began a program of large-scale stock-piling of railroad-ballast rock in anticipation of the expected post-war demand for this product when the railways once again have a sufficient labor supply to carry out much-needed ballasting.

The Coquitlam plant superintendent is A. J. Pitman. Twelve men are employed. The company is fortunate in having several good key men, old employees, here and at the Seymour plant.

The 36-inch disc secondary crusher.

All the conveyor idlers at both plants are of Stearns make, and all the conveyor belts are Goodyear.

About 40 per cent. of the company's normal output is concrete aggregate and plaster sand for the building trade. (At present there is an acute cement shortage in the city.) In addition, road-building and maintenance material, railroad-ballast rock and grade sand, and concrete aggregate for the manufacture of concrete blocks, bricks, wash-tubs, etc., are important items.

The company was founded in 1906 by J. F. Deeks. Two hydraulic plants were opened in 1907 and 1910, respectively, on Howe Sound at what is now Porteau, about 25 miles from Vancouver. Due to the long water haul and general depreciation, these plants were closed in 1927 and 1928. In the same period the Seymour plant was taken over by the Deeks Sand & Gravel Company, Ltd., from another concern, and the Coquitlam plant was built. The rock plant was added to the latter in 1930. In 1937 Mr. Deeks died, and in 1938 H. F. Hamilton took over the direction of the company.

Fordson tractor loading from stockpile.

It is interesting to note that Mr. Deeks obtained his wide knowledge of hydraulics through his experience in connection with gold placer mines in the Yukon, during the gold rush at the turn of the century. Joining the stampede to the gold fields at the age of 30, a tailor by vocation, young Deeks struck it rich, so rich that when he sold out his holdings in 1903 he realized a comfortable fortune. This was his capital when, three years later, he turned his attention to what had long been the apple of his eye—the sand-and-gravel business.

Decrease Reported In Man-hours, Workers, In U. S. Quarries

A survey of the quarrying industry during 1943 revealed a 14 per cent. decrease in the number of man-hours of employment and a 17 per cent. decrease in the number of men employed, according to a report made to Secretary of the Interior Harold L. Ickes, by Dr. R. R. Sayers, Director of the Bureau of Mines. Decreases likewise occurred in both fatal and nonfatal injury rates, thus bringing about a more favorable injury-frequency rate than has occurred since 1913.

Reports from operating companies showed that 69,877 men worked more than 155 million man-hours for an annual average of 2,222 hours per man. Accidents proved fatal to 80 men and injured 5,199. The fatality rate of 0.52 per million man-hours for 1943 was a decrease from the 1942 fatality rate of 0.62. However, compared with the normal 1942 fatality rate of 0.46, arrived at by omitting the deaths of 28 men who were killed in a major disaster in Pennsylvania, the rate for 1943 increased 13 per cent. The rate of nonfatal accidents per million man-hours during 1943 was 33.48, a decrease of 5 per cent. from the rate of 35.11 for 1942. Leading causes of nonfatal accidents were handling materials, machinery, falls of persons, and haulage.

Figures for kinds of stone quarried followed the trend for the entire industry with decreases in number of men employed and number of man-hours of employment for all stones and decreases in injury-frequency rates for all stones except cement rock.

Production of nondimension stone occupied more than 91 per cent. of the men employed in quarrying. Cement rock continued to lead the other kinds of stone with 25,811 men working 59,521,298 man-hours. The injury-frequency rate was 13.34. Granite plants continued to be the largest employer of men in the dimension-stone group. Slightly more than half the men employed in quarrying granite worked in this group, although a shorter workday and workyear combined to make their total hours of employment less than those of men who quarried nondimension granite.

Save with War Savings Bonds

Urgent Demand for Vital Magnesite Met by Using Sink and Float System

By OSCAR H. WICKEN
Superintendent of Heavy-Media Separation
Northeast Magnesite Company

General view of the operations of Northwest Magnesite Company at Chewelah, Washington.

another P&Q exclusive

THE Northwest Magnesite Company was called into being in 1917 by the insistent demand from American industry for a dependable supply of refractory magnesite, which would be as suitable for use in steel, copper and other metallurgical industries as was the material imported from Austria and other foreign countries prior to the First World War.

Magnesite, the carbonate of magnesium, $MgCO_3$, is burned in high-temperature rotary kilns to drive off the CO_2 and to produce a dense moisture-resistant clinkered grain of magnesium oxide or periclase. Its unique place in the metallurgical industry is due to its very high refractoriness or melting point and due to its resistance to corrosion by basic slags, which easily corrode most other materials used for furnace construction. The consumer buys this refractory either as dead-burned clinkered grains (pea size and smaller) for construction of monolithic furnace hearths, or as bricks manufactured by the several refractories companies.

When the supplies of magnesite from Austria and other foreign countries were cut off in 1914, the refractories companies of the United States were confronted with the necessity of obtaining magnesite from domestic sources. At the same time they were made to realize, in time of war, the danger of depending upon a foreign country for a material which, although unknown to the average person, is one of the most essential materials necessary in the production of steel, copper, nickel and other non-ferrous metals, as well as in many other vitally important industrial furnace applications.

Cable tramway which disposes of tailings after ferrosilicon is removed.

The known deposits of California were first developed, but these were not of sufficient extent to take care of the war requirements and, in the meantime, the deposits at Chewelah, Washington, were discovered and recognized as the most important reserve of magnesite ore in the United States. These were the deposits relied upon by the Northwest Magnesite Company in establishing the industry which has served the country since 1917.

As the Second World War brought a great expansion to the magnesite-consuming industries, it became apparent that a larger amount and a higher quality of magnesite than had heretofore been produced would be necessary. It was quickly realized that this improvement in quality and increase in production could not be attained by the past conventional methods, as this would require the employment of hundreds of additional men to hand-sort the ore. Everyone engaged in industry is conscious of the present man-power shortage. Due to this reason it was immediately realized that some mechanical means would have to be developed to meet this emergency. The processes as shown in the accompanying flow sheet were worked out and put into operation to meet

this particular situation.

Discussion of Problem

The company owns several large deposits of crystalline magnesite near the town of Chewelah, Stevens County, Washington, about 60 miles north of Spokane, Washington. The magnesite occurs superficially as massive beds in a sedimentary series, in which are found dolomite, shale and quartzite, into which basic igneous rocks have intruded. The deposits are mined principally by the open-quarry method, with benches of 30 feet and 40 feet high, the limits of which have been determined by regular or orthodox mining practices. Due to the nature of the formation, in which inclusions of impurities occur, it has been necessary to separate the ore from the impurities by hand-sorting, and this method of selection was continued from 1917 until the start of the Second World War in December, 1941.

When it became evident that mechanical separation was a necessity, many and various methods were discussed, and, as the heavy-media separation process seemed to offer the most encouragement, preliminary tests were started. Heavy-media separation is another name for heavy-fluid separation. This is fully described by Gaudin: "If a fluid is available whose specific gravity is intermediate between that of two solids which it is desired to separate, no simpler process could be desired than to suspend the mixed solids in the fluid, allow one to rise and the other to sink, and draw off the separated products from the top and bottom of the separating vessel. A typical example is the separation of wood chips from gravel or sand, using water as the medium."[1] Water has a specific gravity between that of sand and wood chips.

To separate quartz sand from magnesite, the two having specific gravities of about 2.6 and about 3.0 respectively, one would ideally choose a liquid whose specific gravity is intermediate between these two values so that the sand would float while the magnesite would sink. There is not in existence a true liquid meeting this specific-gravity specification, and available in the quantities or at the low cost commercially required. However, successful heavy-media separation processes are based on the principle that a suspension of fine heavy particles in water is for these purposes equivalent to a liquid having the same specific gravity as the suspension. Thus, a suspension of one-third ferrosilicon (specific gravity 6.8) and two-thirds water (specific gravity 1.0) would behave as a liquid with a specific gravity of 2.9, serving to float minerals with lower specific gravity and to separate them from minerals heavier than 2.9, which would sink. Test work showed that a suspension of ferrosilicon or galena in water could be controlled adequately to handle distinct separation of magnesite and the impurities.

It developed during the preliminary work, that because the lower limit of effective hand-sorting was 3-inch rock, large quantities of undersize ore for many years had been hauled to waste dumps. When these facts were coupled with the hope of treating leaner ores not within the scope of hand-sorting, the picture became one of sound economic possibilities, and the decision was made to construct the new mill.

Original research work was carried on in coöperation with the American Cyanamid Company's Ore Dressing Laboratories at Stamford, Connecticut. For various reasons, including its ease of recovery by magnetic methods, it was also decided to use a suspension of ferrosilicon in water as the separating medium. On the basis of test work a flow sheet was developed to treat 3,000 tons of mill feed per day, and construction of the mill was started in June, 1941, and operation started in October, 1943. The new mill was so located that ore could be delivered from the present operating properties as well as the properties which will be operated in the future.

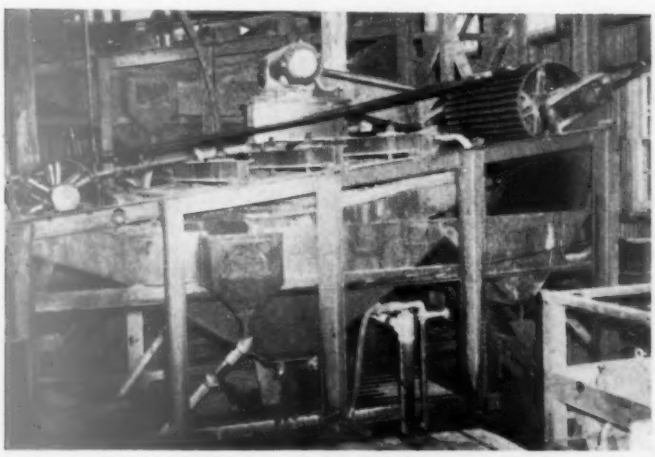
[1]Gaudin (A. M.) — *Principles of Mineral Dressing* (McGraw-Hill Book Co., Inc., New York, 1939), page 239.

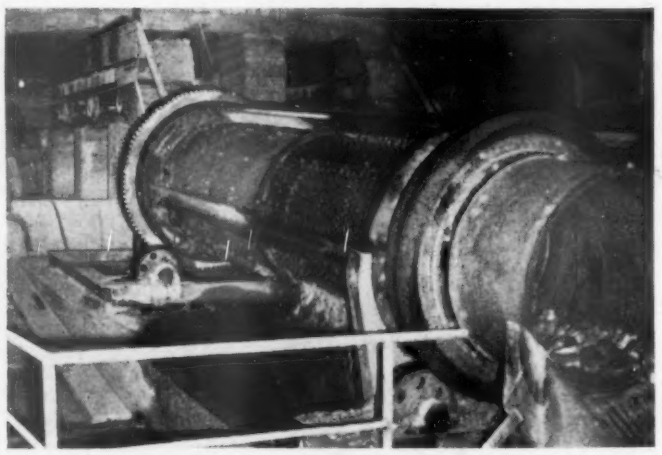
Left—One of the magnetic separators which reclaim the ferrosilicon heavy media from the flotation circuit for reuse.
Right—One of two revolving scrubber screens which separate fine and coarse materials.

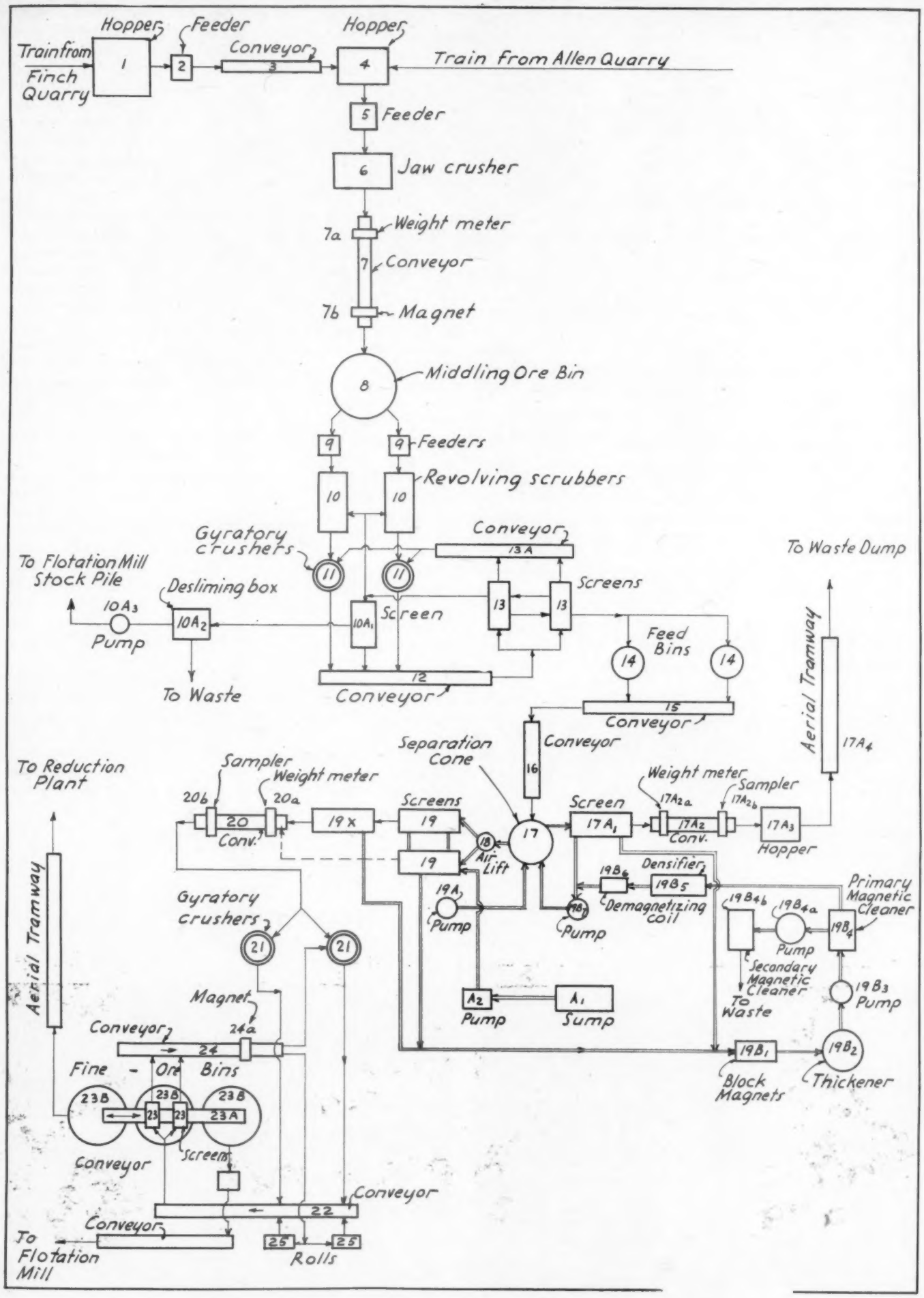
Rock Flow Sheet

The new mill is located midway between the two operating quarries, the Allen and the Finch, which are about one mile apart. Ore from the Finch Quarry is brought by means of a trolley locomotive to a 50-ton hopper (1 in the flow sheet), from which it is fed to a wide conveyor belt (3) by a Link-Belt reciprocating feeder (2). The conveyor belt discharges into what is known as the coarse bin (4) of 200-ton capacity, at which point the Finch ore is joined by the Allen ore brought to the same bin by a trolley locomotive. The ore is fed by a Link-Belt feeder (5) to a 24- by 36-inch Traylor jaw crusher (6), where the rock is crushed to minus 5 inches. The crushed rock is then carried by a conveyor belt (7) to a 600-ton middling-ore bin (8), from which two reciprocating feeders (9), with variable-speed drives, discharge the rock into two Link-Belt revolving scrubbers (10). These scrubbers remove the finer material, which is flumed directly to a 4- by 10-foot Tyler Ty-Rock screen ($10A_1$).

The large-size rock is crushed in two 3-foot Traylor gyratory crushers (11). The crushed rock from these crushers joins the coarser rock from the screen and is carried by a conveyor belt (12) to two additional 4- by 10-foot Ty-Rock double-sur-







Flow-sheet of Chewelah, Washington, plant of Northwest Magnesite Company.

face screens (13). These screens separate the oversize material, which returns (13A) to the gyratory crushers (11), while the intermediates are discharged into the 200-ton cone-feed bins (14).

The rock going over all three screens is thoroughly washed to remove deleterious slimes from the cone feed. These fines are flumed to a desliming box ($10A_2$), the sand material from the box is pumped ($10A_3$) to the flotation-mill stock pile, where the extremely fine material is flumed to a tailings pond.

The cleaned oversize cone-feed ore is fed, (15 and 16) at a controlled rate into the 20-foot separation cone (17), which contains a suspension of ferrosilicon in water, with carefully controlled specific gravity. That part of the feed having greater specific gravity than the ferrosilicon suspension sinks, while the part having lower specific gravity floats.

The "floats," or tailings, are discharged over a weir on a Ty-Rock screen ($17A_1$), where the ferrosilicon medium drains and is washed from the rock. The cleaned tailings are then conveyed ($17A_2$), to a 50-ton hopper ($17A_3$), which loads two buckets on a reversible aerial tramway ($17A_4$). The buckets automatically dump the tailings into a ravine.

The "sinks," or concentrates, are discharged from the cone bottom by an outside air-lift (18) on two screens in tandem (19). Another single screen (19X) is in parallel to be used when the concentrate tonnage becomes excessive. The cleaned concentrates are carried by a belt-conveyor (20) to two 3-foot Traylor multistage gyratory crushers (21), the discharge product of which is conveyed (22) to two 4- by 10-foot Tyler Hum-mer screens (23).

These screens have large openings on the top deck and smaller ones on the bottom. The top-deck oversize is discharged on one side of a conveyor belt and the bottom-deck oversize material on the other side of the same belt. The belt (24) then carries the large size back into one of the gyratory crushers (21), and the small size into two 42- by 16-inch Allis-Chalmers rolls (25). The product from the rolls is discharged on the same conveyor (22) as that from the gyratory crushers and is thus returned to the Hum-mer screens (23). The screen undersize is fed into one of the three 600-ton fine-ore bins (23B) by a reversible conveyor (23A). One of the bins provides feed for the flotation mill, and the other two bins hold the kiln feed for the reduction plant five miles away.

Medium Flow Sheet

In the separation process the ferrosilicon suspension or medium, which carries the "floats" and "sinks" to their respective screens (17A and 19), is largely removed by draining on the first few feet of screen length. This medium is pumped back into the cone by two sand pumps ($19B_7$ and 19A). The ferrosilicon which adheres to the rock is washed therefrom by sheets of water falling from boxes over the screens. This washing, plus the vibratory action of the screens, removes substantially all the ferrosilicon. Fresh-water washing is used exclusively. The water required for all the scrubbing and screening is supplied from a near-by lake by a two-stage Dayton-Dowd pump.

The wash water, containing ferrosilicon, fine sands, and slimes, is gathered from all the screens and passed between block magnets ($19B_1$) before being discharged into a 20-foot Wemco thickener ($19B_2$). The magnetized ferrosilicon settles rapidly. The rock sands and slimes also settle, and the thickener overflow is virtually clean water; it is returned to the circuit, when needed, by a single-stage Dayton-Dowd pump. The thickened, but still dirty, ferrosilicon is pumped by a sand pump ($19B_3$) to the primary Dings magnetic cleaner ($19B_4$), and the concentrate from this machine goes directly to a 36-inch Wemco densifier ($19B_5$). The middling product goes ($19B_4a$) to the secondary Dings magnetic cleaner ($19B_4$). This machine makes a concentrate which joins that from the primary cleaner. The tailings of the secondary magnetic separator, which are composed of rock sand and slime, are rejected.

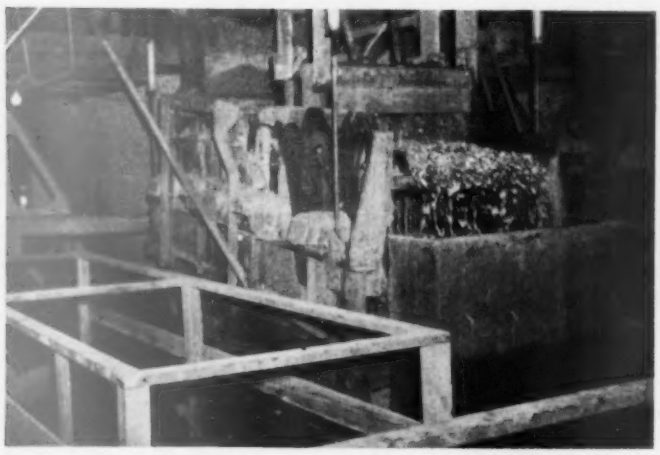
The densifier overflow, which during normal operation has very little ferrosilicon, is piped to the thickener. The underflow of cleaned and dewatered ferrosilicon flows by gravity through a demagnetizing coil ($19B_6$), joins the ferrosilicon drained from the "float" screen ($17A^1$) and is pumped into the cone (17).

In this manner an amount of medium is continuously withdrawn from the cone for cleaning. The entire content of the cone can be cleaned every 15 hours. A movable divider under the sink-and-float screens enables the operator to divert more or less ferrosilicon to the cleaning circuit, depending on the amount of slimes and water entering the cone with the ore.

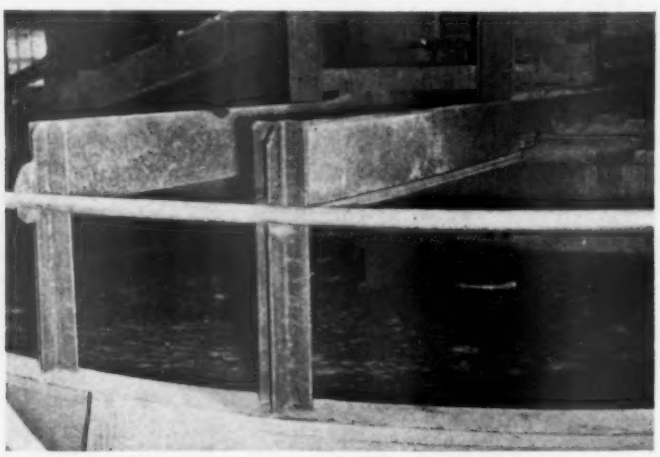
A small amount of new ferrosilicon is daily pumped into the 3,200-cubic-foot sump (A1). Once a week it is pumped (A2) to the "sink" screen (19) and thence into the cleaning circuit. This same sump acts as a catch-all and a reservoir for the entire cone and thickener contents during periodic shutdowns for repair and inspection. A dredge-type pump serves to empty the sump of rock, ferrosilicon and water.

Cone Operation and Medium Control

The upper size limit of the cone feed is determined by proper

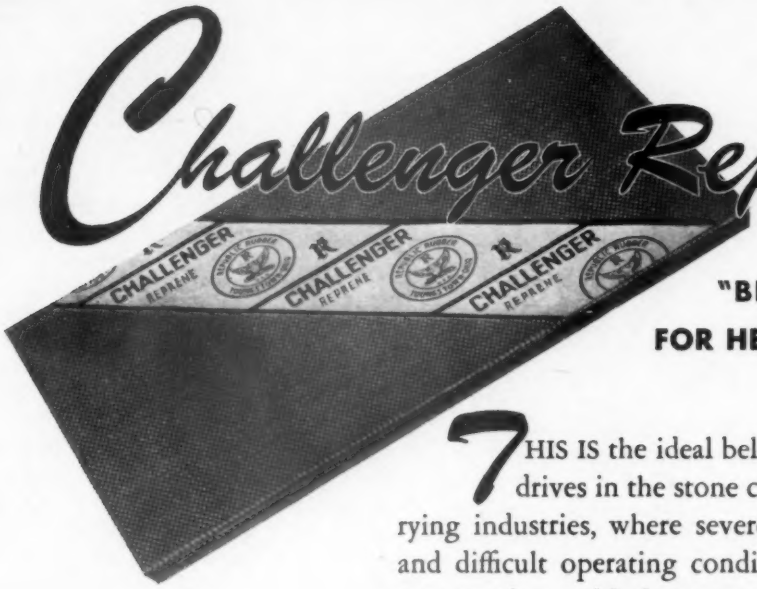


Left—The 4-by-10-foot screen used in the washing and primary separation circuit.



Right—The 20-foot separation cone in the sink-end float system which contain silicon.

Challenger Reprene



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liberation of impurities and by the mechanical necessity of withdrawing the "sinks" through an air-lift. The lower size limit is determined by settling rates. For instance, a fine ore particle with a specific gravity of, say, 2.90 settles so slowly in a medium with a specific gravity of 2.85 as to build up a large load of rock in the cone. Also, the smaller particles, heavier or lighter than the medium, are subject to mechanical entrapment by large particles. Consequently, a small rock that would normally be "float" may be dragged down by a rapidly falling "sink" and thus be included in the concentrates. In this particular flow sheet the efficiency of concentration is decreased with decreasing size of ore.

The ore treated contains the minerals quartz, talc, dolomite, calcite and magnesite, ranging in specific gravity from 2.6 to 3.2. The specific gravity of the bulk of the impurities and that of the bulk of the magnesite are such that the separation must be made within a very narrow limit of difference in specific gravity.

The determination of the specific gravity of the medium at the top and bottom of the cone furnishes the most important guide to operation. If these specific gravities decrease, more medium is withdrawn to the cleaning circuit for water removal. If the top and bottom readings begin to approach each other, the presence of too much rock slime is indicated, and again more medium must be cleaned. The difference in top and bottom specific gravities which make for the best operation must necessarily be found. If the difference is not great enough, the medium is too viscous to allow speedy separation but, if the difference is too great, the suspension is unstable, and middling particles concentrate in the cone center to a greater extent. The thickener serves as storage for excess ferrosilicon, and when more ferrosilicon is needed in the circuit, the thickener rakes are lowered.

The air required for the air-lift is supplied by a double-stage Ingersoll-Rand compressor. By varying the amount of air to the lift greater or lesser amounts of medium are discharged with consequent change in downward velocity within the cone. This fact is frequently used to operational advantage.

Records are kept of the ferrosilicon losses and the distribution of these losses. Merrick Weightometers and Galigher automatic samplers throughout the mill assure accurate computations. Crushing and screening operations are checked frequently to see that efficiency is maintained. Various tests are made on the medium to correlate its nature with the efficiency of the process.

The mill operates three 8-hour shifts each day. Six men in the crushing plant, two in the separation plant, one man at the tailings tram, and one foreman constitute the crew for one shift. In addition there are one oiler, one sampler, three mechanics, two welders, two carpenters, and one maintenance foreman.

For assistance in the preparation of this paper the author wishes to thank E. A. Garber, vice-president and general manager of the Northwest Magnesite Company with offices in Pittsburgh, Pennsylvania; C. A. Sargent, general manager in charge of the reduction plant and quarries; and Howard Ziebell, general superintendent of quarries, heavy-media separation and flotation.

Organization Outlined For Bureau of Mines

In an Executive Order dated February 17, 1945, the field organization of the mining and metallurgical branches of the Bureau of Mines was established. The metallurgical branch of each field division will be responsible for research "on the conservation, preparation, and utilization of metals and nonmetals," including ore dressing. The field divisions of the mining branch will take charge of engineering examinations and exploratory projects for the purpose of discovering and proving additional deposits of critical and essential minerals. The work of the mining branch will also develop improvements of operations in existing mines. Work in fuels and helium is not included.

The metallurgical and mining branches will each have a branch chief in Washington, to whom the field division chiefs will report. L. B. Moon has been designated as chief of the mining branch, with G. D. Jermain as assistant. The chief of the metallurgical branch is to be R. G. Knickerbocker, with O. C. Ralston assistant chief. Field divisions and their headquarters are as follows:

A. Alaska Division, comprising the Territory of Alaska, with headquarters to be designated by the Director.

B. Albany Division, comprising the States of Washington, Oregon, Idaho, and Montana, with headquarters at Albany, Oregon.

C. Boulder City Division, comprising the States of Nevada and California, with headquarters at Boulder City, Nevada.

D. Salt Lake City Division, comprising the States of Utah, Wyoming, and Colorado, with headquarters at Salt Lake City, Utah.

E. Tucson Division, comprising the States of Arizona, New Mexico, and Texas, with headquarters at Tucson, Arizona.

F. Minneapolis Division, comprising the States of North Dakota, South Dakota, Nebraska, Minnesota, Iowa, Wisconsin, and Michigan, with headquarters at Minneapolis, Minnesota.

G. Rolla Division, comprising the States of Kansas, Oklahoma, Missouri, Arkansas, Illinois, and Indiana, with headquarters at Rolla, Missouri.

H. Tuscaloosa Division, comprising the States of Louisiana, Mississippi, Alabama, and Florida, with headquarters at Tuscaloosa, Alabama.

I. College Park Division, comprising the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Ohio, West Virginia, Maryland, and Delaware, with headquarters at College Park, Maryland.

J. Raleigh Division, comprising the States of Virginia, Kentucky, Tennessee, North Carolina, South Carolina, and Georgia, with headquarters at Raleigh, North Carolina.

No announcement has yet been made as to who will be the field division chiefs.

• Correction

In the report of the annual meeting of the National Crushed Stone Association in New York, which was published in the March, 1945, issue of PIT AND QUARRY, C. E. Wuerpel, engineer in charge, Corps of Engineers, U. S. Army, Central Concrete Laboratory, Mount Vernon, N. Y., was one of the principal speakers. A statement made by Mr. Wuerpel was incorrectly reported and should have read as follows:

"According to Mr. Wuerpel, the brands of cement tested showed wide variations in the amount of air entrained for different lengths of mixing except where 0.01 per cent. of neutralized Vinsol resin was added at the mixer. He stated his conviction that air entrainment is a tremendous forward step in the technology of cement and concrete and said that if test results continue their present trend, he will recommend the addition of air-entraining agents at the mixer. For such addition, he said, some method of accurate and automatic control of the addition is necessary."

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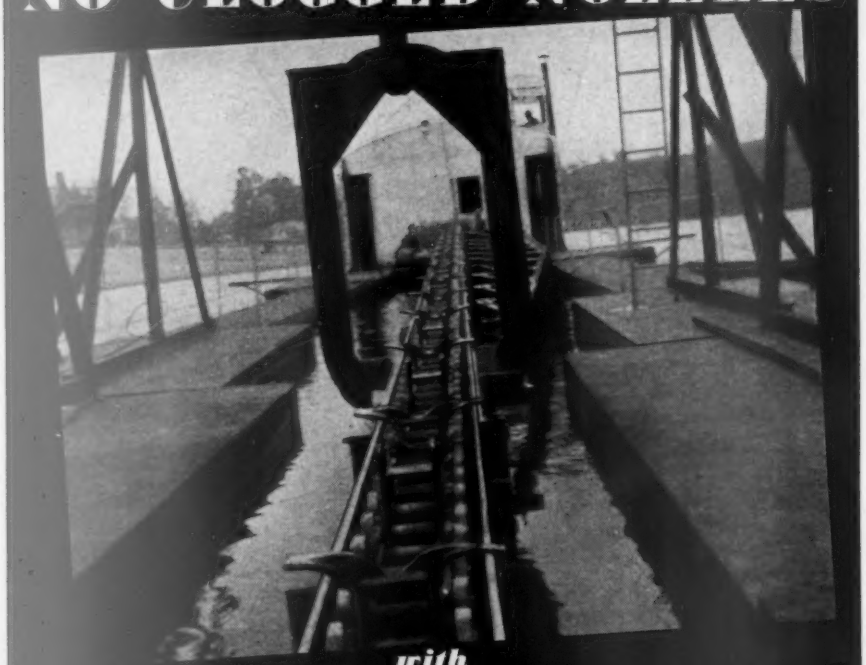

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From an Arkansas gravel dredge operator—

"Formerly oversize rock would cluster around our suction pipe, and we would have to raise the pipe and cut our motor out, so as to allow these rocks to fall off. This often had to be done from twenty to thirty times a day, but is now (since installing an Eagle 'Swintek' Ladder) a thing of the past."

The above excerpt from a letter written by the superintendent of an Arkansas gravel company tells in a few words one of the reasons why progressive dredge operators are turning to Eagle "Swintek" Ladders.

Eagle "Swintek" Ladders have many other features that enable them to get out more aggregate at lower costs. They go deeper for the desirable lower level gravels. The cutters on the traveling chain loosen gravel, carry away boulders and agitate the loosened material, thus increasing the intake of solids by the suction nozzle.

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PERSONAL MENTION

PAUL KIRKBRIDE has been appointed plant manager of the Independence, Kansas, plant of the Universal Atlas Cement Company. He succeeds Charles M. Carman, who resigned March 1.

Paul Kirkbride

Mr. Kirkbride has served as assistant plant manager at Independence since June 1, 1943. He first joined the company as engineer and assistant maintenance superintendent at the Northampton, Pennsylvania, plant in 1919.

HARRY D. METCALF, for the last six years chief engineer of road maintenance and repair for the Ohio department of highways became the Kentucky state highway maintenance engineer March 1.

In announcing Metcalf's appointment Highway Commissioner J. Stephen Watkins said that Dwight H. Bray, who has had 25 years' service with the Kentucky highway department and had been maintenance engineer, was assigned as road design director to supervise the proposed $75,000,000 postwar road-building program.

GEORGE J. FREDERICKS, president of the Consolidated Stone and Sand Company of Montclair, New Jersey, recently resigned from that company, in which he has served as treasurer and president for the past 25 years.

W. D. EDWARDS, vice-president of National Lime & Stone Company, Findlay, Ohio, recently was elected a director of Aro Equipment Corporation.

PERRY T. FORD, well-known civil engineer of Columbus, Ohio, has been appointed director of the State Department of Highways by Governor Frank Lausche. Mr. Ford is thoroughly familiar with the work of this department, for he served as Columbus divisional engineer in the State Highway Department during the administration of Governor Cox and also as a county engineer in Putnam County.

Mr. Ford, active in local and national engineering societies, has been president of both the Ohio and National Society of Professional Engineers and vice president of the National Council of State Boards of Engineering Examiners.

HAL G. SOURS, Ohio's former state highway director, announced Feb. 5 he had formed a partnership with Eugene E. Baldwin, formerly of Taylor and Baldwin, Columbus, Ohio.

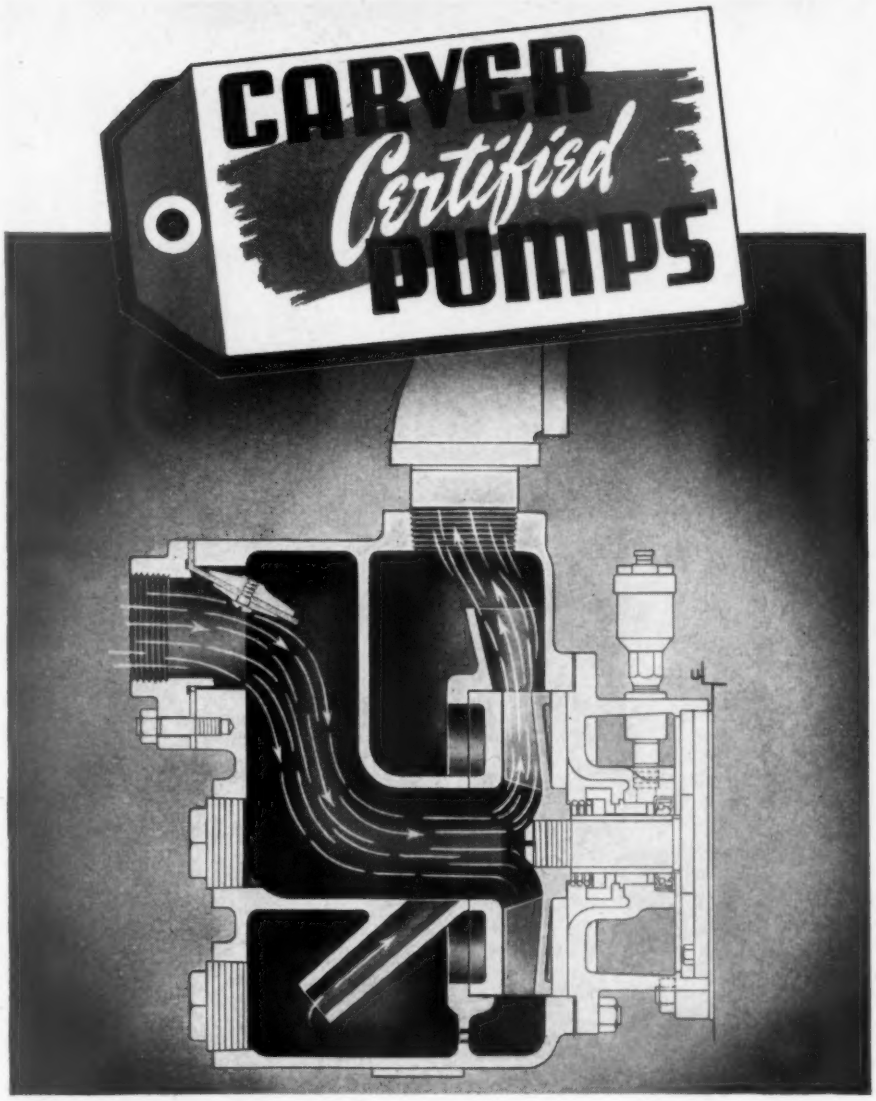
To be known as Baldwin and Sours, with offices at 83 South High St., Columbus, the new partnership will be engaged in the handling of highway materials and equipment, including asphalt, road oil and chemicals for ice control, bituminous distributors and accessories, street sweepers, and salt and stone spreaders.

H. S. REICHENBACH, for the past 22 years assistant advertising manager of the Lehigh Portland Cement Company, has resigned to become advertising manager of Traylor Engineering & Manufacturing Company, Allentown, Pennsylvania.

ROBERT MITCHELL, president of Consolidated Rock Products Company of Los Angeles, recently received word that his niece, Mrs. Betty Bowers Lacey and family, who had been interned by the Japanese at Los Banos prison camp near Manila, had been liberated.

HAROLD R. CURRIE, former purchasing agent, secretary and treasurer of the Wabash Portland Cement Company at Osborn, Ohio, was appointed on February 21 local auditor of the plant which was recently purchased by the Universal Atlas Cement Company.

MAX TESSMER, formerly in charge of shaft sinking and underground mining of limestone for Pittsburgh Plate Glass Company, Barberton, Ohio, has gone to Gouverneur, New York, as mining engineer for International Talc Company, Incorporated.



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RAY A. YOUNG, for many years sales manager and assistant to the president of the Northwestern Portland Cement Company of Seattle, has resigned. He joined the company when it was organized in 1927 and construction started on its plant at Grotto.

JOHN CURTIN, SR., assistant sales manager of the Warner Company's plant at Bellefonte, Ohio, recently was elected president of the Pennsylvania Stone Producers Associa-

John Curtin, Jr.

tion for the current year. Mr. Curtin, an active Association member for many years, is well known throughout the crushed-stone industry.

CLARENCE E. ANDERSON, former assistant manager of the National Gypsum Company plant at National City, Michigan, became its manager upon the recent retirement of H. B. Brockenbrough.

At the outbreak of the war he was engaged by National Gypsum as a nitrate superintendent in the manufacture of bombs. He was recently transferred to National City as assistant manager.

K. PETERS, formerly chief engineer of the Potash Company of America, Carlsbad, New Mexico, has been appointed resident manager succeeding R. M. Magraw.

BYRON E. THOMAS, president of the American Pumice Company, Los Angeles, announces that the company's offices are now located in the Pacific Mutual Building.

OBITUARY

WALTER S. WARE, 71, prominent in Ohio Valley gravel circles for many years and former operator of the J. R. Ware Sand & Gravel Company with offices in Cincinnati, Ohio, Covington and Newport, Kentucky, died Feb. 19 of a heart attack at his home in Fort Thomas, Kentucky. After the death of his father, James R. Ware, 40 years ago, he was associated with his two brothers, Raymond Ware, Fort Thomas, and Menter Ware, now of Memphis, Tennessee, in operation of the sand and gravel company.

NATHAN E. NEWMAN, 62, since 1920 president of Asbestos, Ltd., asbestos products manufacturers, New York City and Millington, New Jersey, died March 14 in New York after a brief illness.

Born in Cleveland, Mr. Newman was long regarded as an authority on asbestos and had been consulted by the late Thomas A. Edison and by the Army and Navy departments. During the present war he perfected several asbestos products which proved of great value in amphibious operations.

RAY M. INKLEY, Pfc., of the First Battalion, Tenth Infantry, Combat Engineers, was killed in action in Germany on December 10. He had been decorated several times for heroism. He was a son of Thomas Inkley, president and manager of the Inkley Marble Quarries Company, St. Genevieve, Missouri, and had been associated with him in his crushed and dimension stone business before entering the service.

WALTER S. DILLS, president of the Yahola Sand and Gravel Company, Muskogee, Oklahoma, died recently. Although he had been in ill health for the past year or more, Dills remained active in operation of the Yahola company.

WILLIAM A. MIDDLETON, Erie, Pennsylvania, former president of the Lake Shore Sand and Gravel Company, died recently. Before coming to Erie in 1915, he had practiced law in Conneaut, Ohio.

N. R. FRANCE, former president of the France Stone Company of Toledo, Ohio, died March 16 at his winter home in Daytona Beach, Florida.

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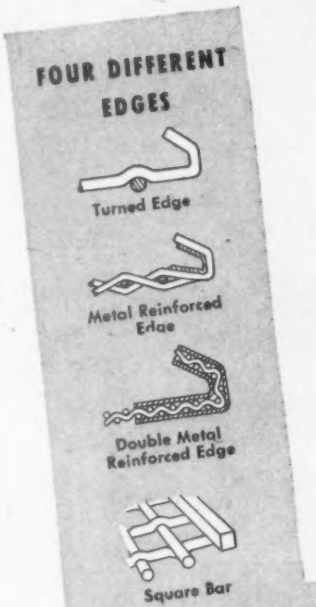

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Legal Decisions

By LEO T. PARKER

Soldiers' Relief Act Not Applicable

The Soldiers' and Sailors' Civil Relief Act is not effective in all cases to prevent suits against members in the military service of the United States. For illustration, in *Ellis v. Smithers,* 174 S. W. (2d) 568, it was shown that a buyer, named Ellis, purchased equipment under a conditional sales contract. The purchase price, including carrying charges, amounted to $181.40. There was a down payment of $34.89, and Ellis agreed to pay the remainder in monthly payments of $8.51. Seven of these monthly payments were made but in July, 1942, Ellis was behind three payments. The seller filed suit to gain possession of the equipment. The counsel for Ellis argued that the latter was protected by the provisions of the Soldiers' and Sailors' Civil Relief Act of 1940.

The higher court refused to hold that the seller could not repossess the equipment, and said:

"We think it clear that appellant (Ellis) was not entitled to the protection claimed. The act protects only those who are already obligated when the act was approved and became effective, and does not apply to those who became obligated after its effective date, and then went into the Armed Forces. Appellant became obligated, on the contract here, October 18, 1941, approximately a year after the effective date of the Soldiers' and Sailors' Civil Relief Act of October 17, 1940."

Notwithstanding the legal effect of this decision readers should realize that the Soldiers' and Sailors' Civil Relief Act was amended October 6, 1942 and the above equipment was repossessed some time between July 30 and August 2, 1942, prior to the approval, and effective date, of the amendment on October 6, 1942. Whether this amendment changes the legal status of purchasers who are in the Military Service remains for higher courts to decide in future litigations.

Also, in another higher court case, decided last year, the higher court refused to "stay" a suit against a soldier. In this case it was shown that the soldier had purchased equipment before he entered the army. He owed two payments. The court authorized the seller of the equipment, who held a recorded condition contract of sale, to sell the equipment to the highest bidder and pay to the soldier the difference between the sale price and the amount due the seller for the last two payments. See *Williams,* 132 S. W. (2d) 141.

When Is Driver Interstate Employee?

Considerable legal discussion has arisen in the past over the answer to the legal question: When is a truck driver entitled to wages specified by the Fair Labor Standards Act? In *Guthrie v. Emmons,* 12 Ohio Supp. 45, Ohio, it was disclosed that the driver of a motor truck hauled goods in interstate commerce. He sued his employer to recover wages for overtime, liquidated damages and attorney's fee under the provisions of the National Fair Labor Standards Act. The higher court refused to hold the employer liable because the Interstate Commerce Commission had the power to fix the hours of service of this truck driver. Under such circumstances the Fair Labor Standards Act is not applicable.

But in *Farris v. Same,* 12 Ohio Supp. 46, Ohio, a higher court held that every driver is entitled to wages specified by the Fair Labor Standards Act if he operates a motor truck wholly within the state, but takes from dumps or depots products shipped from other states. This higher court explained that this driver transported goods exclusively in a single state and, therefore, he was not within jurisdiction of the Interstate Commerce Commission. However, the court held that all truck drivers, who perform the final act of delivering merchandise shipped in interstate commerce, are within the provisions of the Fair Labor Standards Act since this Act includes all employees engaged in producing, processing or handling goods in interstate commerce.

On the other hand, see *Norton v. White Company,* 27 S. E. (2d) 448. In this case the higher court held that no "executives" are within the provisions of the Fair Labor Standards Act.

Driver Disobeys Employer

A truck driver who disobeys the instructions of his employer, or gets outside the scope of his employment, automatically forfeits his right to recover damages or compensation for an injury. In *Ginther v. Graham Transportation Company,* 33 Atl. (2d) 923, it was

FEEDING	*Constant Weight Feeder* *Weight Recording Feeder* *Volumetric Feeder*
PULVERIZING	*Conical Ball Mills* *Conical Pebble Mills* *Rod Mills* *Tube Mills* *Batch Mills* *Thermomills*
CLASSIFYING	*Air Classifier* *Counter Current Classifier* *Hydro Classifier*
AGITATING	*Mechanical Type Agitator* *Air Lift Type Agitator*
PUMPING	*Diaphragm Pump* *Pressure Pump*
THICKENING	*"Auto-Raise" Thickener* *Tray Thickener* *Sand Filter*
DRYING	*Ruggles-Coles Dryer* *Rotary Kilns* *Rotary Coolers*
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shown that a truck driver temporarily permitted another person to drive his truck. The regular driver was killed when the truck ran into a culvert. The higher court refused to allow compensation to the dependents of the truck driver, and said:

"When Ginther (driver) left the wheel and delegated its operation to another he completely abandoned his most important service to the employer and was not in the course of his employment."

Questions and Answers

[Mr. Parker will be glad to answer questions regarding legal problems of PIT AND QUARRY readers. Questions should be addressed to Leo T. Parker, Legal Editor, PIT AND QUARRY.—Ed.]

Legal Editor: We operate a sand-and-gravel washing plant. It has been in operation about twenty years at this location and our trucks have to go through the borough to get to the state highway. The borough has posted this road for 7-ton maximum loads, the sign reading: WARNING: NO TRUCK OVER 7-TON PERMITTED. THIS IS NO THOROUGHFARE.

Is this legal? We would like to know what can we do about this, as it hurts our business. Each year about 20,000 tons of material is hauled over this road. We would appreciate your view on this question.—L. S. P. C.

Answer: Modern higher courts hold that before a municipality has power or authority to regulate or improve a street, alley or other public passage the same facility must have been lawfully established. (See *Culvert,* 72 N. E. 1141.) However, no formal transfer or delivery of title is necessary (*State,* 129 Ark. 286), it being sufficient if the owner of the street performs any act with the intention to dedicate, give or sell the property for street or passageway purposes. (See *Meyer,* 171 S. W. 600.) On the other hand, if a city uses a street for a term of years, generally 16 to 21 years it may acquire absolute ownership by adverse possession, or against the will of the owner and without paying anything for the property.

The extent of the power of municipal officials to improve or control a street depends upon the provisions of its charter, and the state statutes. (See *Kansas,* 263 Fed. Rep. 115.)

Modern courts hold that a municipality need not improve the whole or complete width of a street, but may improve only the part presently needed adequately to accommodate traffic, in consideration of all the facts as to the kind and quality of other streets and the funds available for repairing and improving streets. (See 70 Cal. 534; 44 Utah 204; 208 N. W. 916 and 58 N. E. 328.)

Of course, municipalities may restrict the use of streets, as to which direction vehicles shall travel thereon, the parts of streets which shall be used for pedestrians, and the like. (See 280 S. W. 51; 224 Pac. 1008; and 231 Pac. 958.)

Modern higher courts consistently hold that municipal officials may limit the weight which shall be transported over certain specified or all city streets. (See 182 S. W. 645; and 105 N. E. 336.) This is so if hauling more than the limited weight is likely to destroy or damage the street. (See 122 S. E. 240; 162 Mass. 496; 16 N. Y. S. 583; and 114 Wash. (405.) It is not illegal for municipal officials to limit the weight, size, tire area, height or width of motor vehicles on a certain specified street provided, of course, these restrictions are necessary to prevent excessive damage to the street. (See 51 N. E. 758, and 44 Atl. 118.) On the other hand, in *McMillan,* 11 Man. 216, the higher court held that where a state law authorizes municipalities to limit loads on streets, the officials can not put up a sign to the effect that anyone violating this rule will be held liable for the damage he causes. Thus the officials must restrict the weight and not attempt to permit use of a street to the ultimate expense of one who may damage it.

In *Brown,* 93 Kan. 737, L.R.A. 19150 327, there is a list of higher court decisions which held that a municipality has not the legal right or power to arbitrarily deprive any person of the use of a street where a restriction deprives a citizen from carrying on his regular business. In *Bennett,* 156 Ind. 478, the higher court held that city officials could not legally prevent the owner of a traction engine from running it over the streets. This court held an ordinance or regulation of this nature unreasonable and void. Of course, anyone who violates a regulation and damages city streets may be held responsible. (See *Durz,* 40 Pa. Co. 510, and Gee, 199 Iowa 121.)

Pressed Steel Car Company, Incorporated, Pittsburgh, recently announced the election of Harry Odle as vice president in charge of exports, effective February 1. Mr. Odle has been Manager of Export for the company for many years.

MARION Dump Bodies Are "Tough Babies"

Yes, they are built to take a whale of a lot of punishment without whimpering. They can take the work the big shovel hands out and clamor for more.

Like all MARION Bodies and Heavy Duty Hoists, they give exceptional service in the rock, sand and gravel hauling field. Choose from a complete line of standard MARION equipment, or if you have a specialized hauling problem which calls for bodies made to your specific requirements, MARION Engineers will work out the designs with you.

SEE YOUR DISTRIBUTOR OR WRITE THE

MARION METAL PRODUCTS CO.

MARION, OHIO

TRAFFIC News Digest

NEW ENGLAND FREIGHT ASSOCIATION

Docket 64109 (2-R).—Limestone, ground or pulverized, and lime, common, hydrated, quick or slaked, carload from West Chelmsford, Massachusetts, to stations in Trunk Line territory. (Exhibit showing proposed rates will be furnished upon request.) Present class rates apply. Reason: To establish commodity rates comparable with other commodity rates now published on these materials.

TRUNK LINE ASSOCIATION DOCKET

Docket 42717 (shippers).—To amend Items 3847 and 3848 of Agent Curlett's Tariff 23-M, I.C.C. No. A758, covering stone, *viz.:* roofing granules, etc., from various trunk-line origins to various Central Freight Association destinations, by the addition of Kenton, O., as a destination at rates of $4.25 from Group A points and $4.03 from Group B points; also add Kenton, O., as a destination in Item 3807 of the same tariff at rate of $4.25.

Also amend Agent Hecker's Tariff, I.C.C. No. 234 covering the same commodities, to provide for rate of $4.03 per net ton, from Arvonia, Dutch Gap and Esmont, Va., to Kenton, O. Reason: To restore rates formerly in effect.

Docket 42727 (shipper).—Limestone, ground or pulverized, and stone dust, carload, minimum weight 60,000 pounds to Castleman River Railroad stations, *viz.:* North, Pa., Grantsville, Jennings, and Bittinger, Md., from origins named in P.R.R. tariff I.C.C. 2194 taking:

Groups	Rate Per Net Ton
Martinsburg group	$2.20
Frederick group	2.42
York group	2.42
Chester Valley group	2.86
Lebanon group	2.64
Bellefonte group	2.31
Ashcom, Pa.	1.86
Billmeyer group	2.53
Naginey, Pa.	2.20
Tyrone group	2.15
Texas group	2.53

Reason: Comparable with rates on similar commodities.

Docket 42744 (shippers).—(a) Sand [except sand, molding, bonded (naturally or otherwise), and except ground or pulverized sand], and gravel, in open-top equipment; rates will not apply on shipments in cars with tarpaulin or other protective covering, in such instances the rates applicable on shipments in closed cars are to be assessed. (b) Sand, molding, bonded (naturally or otherwise), in all kinds of equipment, sand [except sand, molding, bonded (naturally or otherwise) and except ground or pulverized sand] and gravel, in closed equipment. Minimum weight 90 per cent. of the marked capacity of the car, etc.

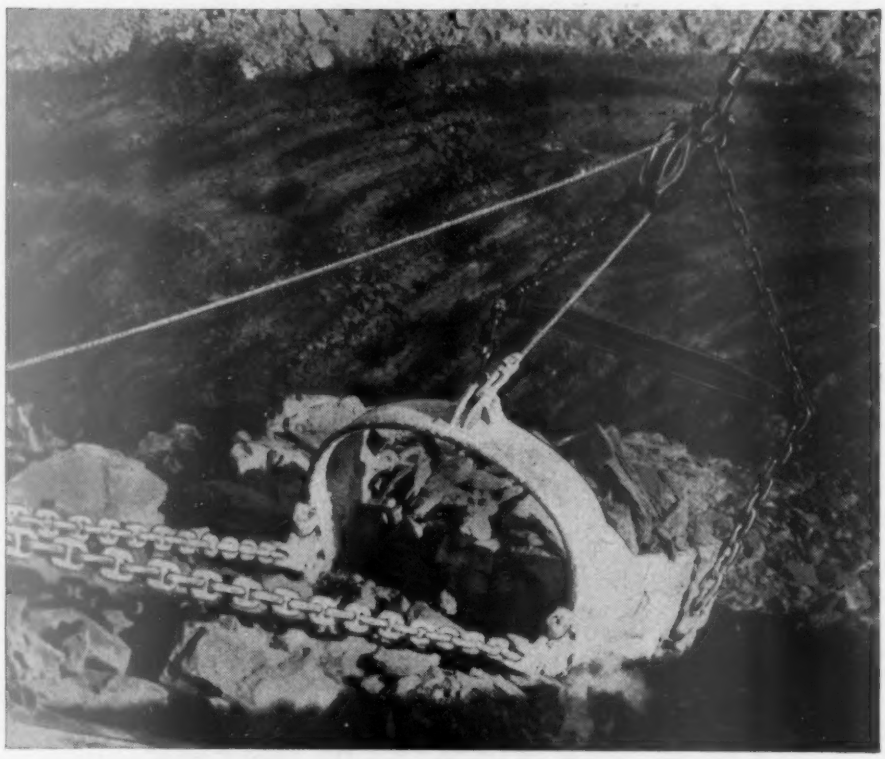
	From New Savage, Md.		From Worth, Pa.	
To:	A	B	A	B
Coraopolis, McKees Rocks, Monessen, Vanderdergrift, Pa.	154	176	154	176
Glassport, Homestead, Pa.	143	165	143	165
Greensburg, Pa.	132	154	132	154
Johnstown, Pa.	121	143	99	132
McKeesport, Pa.	*143	165	121	165
McKeesport, Pa.	†143	165	143	165
McKeesport, Pa.	‡143	165	143	165
Pittsburgh, Pa.	*154	176	121	165
Pittsburgh, Pa.	†154	176	143	165
Pittsburgh, Pa.	‡154	176½	143	165
Uniontown, Pa.	*132	143	99	143
Uniontown, Pa.	†132	143	121	143
West Homestead, Pa.	143	165	121	165

*B. & O. †P. R. R. ‡P. & L. E.

Rates in cents per net ton in lieu of present 6th class basis. Reason: Comparable with rates applying from and to other points.

Docket 42738 (carriers).—Limestone, crude, fluxing, foundry and furnace, when loaded in bulk, in open-top equipment, carload from Cedar Hollow, Swedeland, and Devault, Pa., to Johnstown, Pa., $1.39 per gross ton and to Buffalo and Lackawanna, N. Y., $1.79 per gross ton. Reason: Comparable with rates applying from other points.

Docket 42746 (shippers).—(a) Sand [except sand, moulding, bonded (naturally or otherwise), and except ground or pulverized sand] and gravel, in open-top equipment, without tarpaulin or other protective covering; (b) sand [except sand, molding, bonded (naturally or otherwise), and except ground or pulverized sand] and gravel, in closed equipment or in open-top equipment with tarpaulin or other protective covering; sand, molding, bonded (naturally or otherwise), in all kinds of equipment, carload minimum weight 90 per cent. of the marked capacity of the car, etc., from Hopatcong Junction, Kenvil and Succasunna, N. J., to York, Pa., (a) $2.04 per ton of 2,000 pounds, and (b) $2.20. Reason: Comparable with rates applying from and to other points.



Coal Strippers Know...You've Got to

TAKE IT OFF!

Results Show Page *Automatics* Are Tops for Uncovering Coal...

On more than 90% of the nation's coal stripping operations, Page AUTOMATIC dragline buckets dig through soapstone, shale and blasted rock in record time . . . and yet clean off the coal without tearing it up.

Page AUTOMATIC-DIGGING-ACTION increases yardage and reduces maintenance costs!

PAGE *Automatic* DRAGLINE BUCKETS

PAGE ENGINEERING COMPANY, CHICAGO 38, ILL.

NEW MACHINERY and SUPPLIES

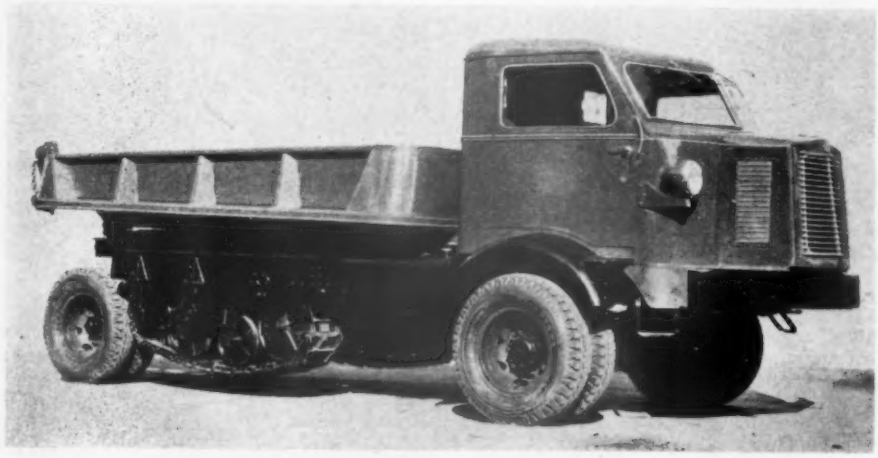
● Tractor Truck

The Linn Manufacturing Corporation, Morris, New York, have been manufacturing this type of unit for over 28 years. In appearance, operation and general construction, the Haftrak resembles the conventional truck, except that the propulsion is through tracks, which are used in the place of rear wheels.

They are designed primarily for off-the-highway operation, and the obvious reason for tracks is to obtain traction over terrain that it is impossible to negotiate with wheeled vehicles; such as steep grades (25 to 35 per cent.), deep mud, snow and ice, sand and rocks.

Haftraks are used with rear or side dump bodies, logging bunks, bulldozers and angledozers, snow plows, power shovels, cranes, winches, compressors, pumps, etc.; mounted or attached to the chassis. As prime movers, they are powered to pull semi-trailers, such as bottom, rear or side dump bodies, logging bunks, etc., in addition to their mounted load.

The CATRUK Model C5 has four wheels as a truck and tracks in the rear. The rear wheels are hydraulically retractable, so that the unit may be operated as a truck or half-track to meet the ground conditions.



Truck with retractable rear wheels.

● Arnold Lubricator

Rucker Equipment Company, Oakland, California, have announced the Arnold Oiled Air Automatic Lubricator. This lubricator combines tough durability with lightness in weight and is scientifically designed for either stationary or portable installations, wherever pneumatic tools or equipment are used. Constructed of Dural Alloy No. 365, tensile strength 33,000 pounds to square inch, Brinell hardness 85%, elongation 2%. Simple construction insures efficient, trouble-free operation. It operates in any position for portable work and is smooth in contour so lines can be easily dragged around corner. Proper tool lubrication means extra profits by, cutting down maintenance costs, increasing workers' production, preventing expensive parts replacement costs, and by increasing the life of your pneumatic tools and equipment. The new and improved feeder insures correct mixture of oiled air to your pneumatic tools or equipment. Easily adjusted from absolute zero to 30 thousands of an inch. There are no parts to wear as the Arnold Lubricator is designed on the dash pot principle, thereby eliminating any needle valve.

Air line lubricator.

RYERSON STEEL IN STOCK

Call Ryerson when you need steel—any kind, shape, or size. Large stocks are available at ten convenient plants. Ask for a Ryerson Stock List—your guide to quick shipment of steel.

Principal Products Include:

Bars • Shapes • Structurals • Plates • Sheets
Floor Plates • Alloy Steels • Stainless Steel
Shafting • Screw Stock • Wire • Mechanical
Tubing • Boiler Tubes • Reinforcing Steels
Tool Steels • Babbitt • Nuts • Bolts • Rivets
Welding Rod • Etc.

JOSEPH T. RYERSON & SON, Inc.

Plants at:
CHICAGO, MILWAUKEE, ST. LOUIS, DETROIT, CINCINNATI, CLEVELAND, BUFFALO, BOSTON, PHILADELPHIA, JERSEY CITY

Loads of Rock Over Roads of Rock

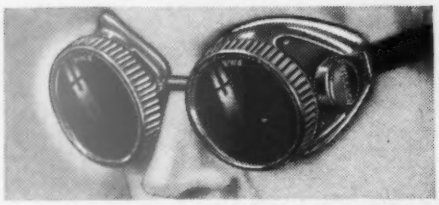
LINN HAFTRAKS, with Contour-following Traction, move 8 yard loads of asbestos rock over 25 per cent grades.

THE LINN MANUFACTURING CORP. Morris, N. Y.

WILLSON-WELD LENS FEATURES

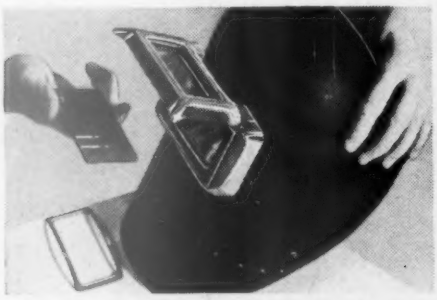
MARKED

When you see the WW trademark on a Willson-Weld lens, it's your assurance of dependable eye protection for welders. The shade number on each lens, determined by individual photometer test, permits easy selection. Never take a chance on unidentified welding glass.



MATCHED

The WW also means that for either goggles or helmets, Willson-Weld lenses are matched to Federal specifications for reducing intensity and glare of visible light and filtering out dangerous ultra-violet and infra-red rays.



REPLACEABLE

Replaceable clear cover glasses protect Willson-Weld lenses from pitting. Lens and cover glass economical to replace. Lens easily changed for different types of welding.

For welding eye protection consult your Willson distributor or write direct to Dept. PQ-8.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

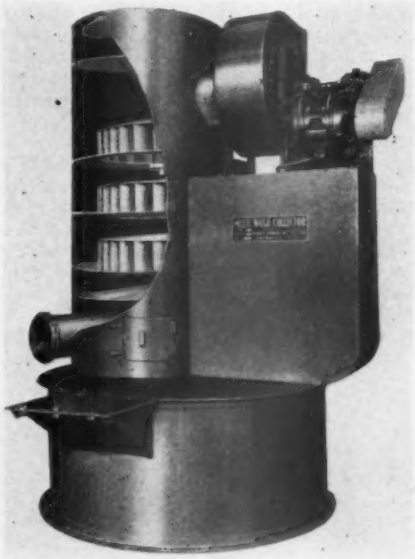
DOUBLE WILLSON

PRODUCTS INCORPORATED

READING, PA., U.S.A. *Established 1870*

● Dust Collector

The Claude B. Schneible Company, Detroit, have introduced a Multi-Wash Collector which combines in a single compact, portable self-contained unit all of the functions of the larger central

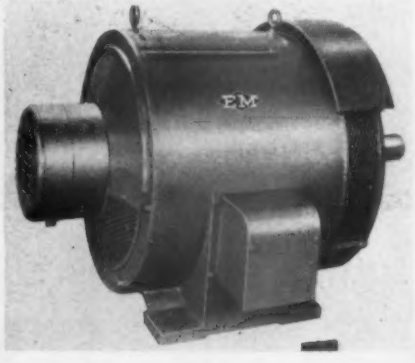


Dust and fume collector.

dust and fume control system. The equipment consists of a three and one-half impingement stage multi-wash dust collector, a suction fan, a sludge settling tank, a recirculating pump, a sludge settling tank and an after-filter. "EC" units are available in capacities of from 400 to 5,000 cubic feet of air per minute. This collector is designed to function indefinitely with but little attention and with a very minimum of maintenance. There are no bags, screens or filters to require cleaning or replacement. There are no parts to rapidly wear, clog, burn or become inoperative. The collected matter, as sludge, is disposed of more easily than an accumulation of dust.

● High Speed Generator

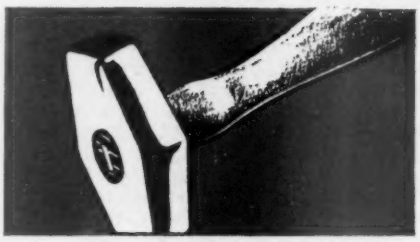
Electric Machinery Manufacturing Company, Minneapolis, has introduced a line of high-speed, a.c. generators. They are supplied as two-bearing units for belted or coupled duty, or single-bearing for direct coupling to driving engine. Available in the following sizes: 18.7 to 125 kv.a., 180 to 514 r.p.m., for standard voltage; 1, 2 and 3-phase, 50 and 60 cycles, 80 per cent. power factor, 50 deg. C. or 40 deg. C. rise. "Packaged" units of these generators are also available, with frame-mounted controls, and factory-connected wiring. A metal



High-speed a.-c. generator.

IT'S EASIER AND QUICKER

to use this



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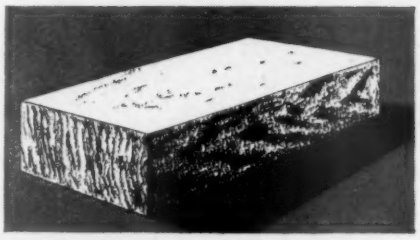

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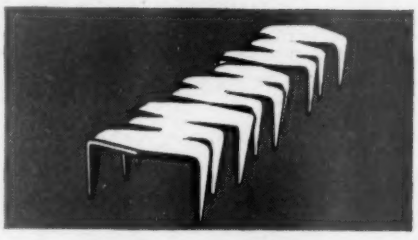

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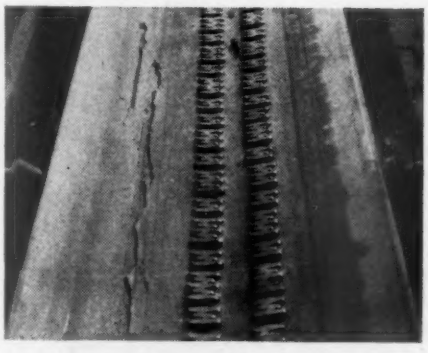


BRISTOL'S BELT LACING

For rubber or woven conveyor belts up to $\frac{13}{16}$" thick.
Write for Bulletin 736.

THE BRISTOL COMPANY
Mill Supply Division
137 Bristol Road, Waterbury 91, Conn.
DISTRIBUTORS EVERYWHERE

enclosure houses voltage regulator and meters at the drive end of the generators. A suction-type fan pulls a large volume of air through the direct-connected exciter and the generator; this intake of ventilating air at the exciter end, opposite the driving engine on direct-coupled units, prevents circulation of heated air.

● Earthmover

The new Terra-Cobra, self-propelled Earthmover of Wooldridge Manufacturing Company, Sunnyvale, California, embodies many new features. Positive two-wheel hydraulic steering gives the operator full control of the unit at all times by maintaining a fixed direction of travel over all types of ground and at all speeds. Both drive wheels turn at exactly the same time under full traction and power by means of a single steering bar. Powered by a heavy duty diesel engine with four speeds forward, plus a reverse gear, the Terra-Cobra attains travel speeds up to 20 m.p.h. on either short or long stretches. Surplus rim-pull, not only permits rapid acceleration to any desired speed in a short distance but it likewise provides sufficient power for the fully loaded unit to climb comparatively steep slopes without the help of a "pusher." Another feature of the Wooldridge Terra-Cobra is its powerful yet smooth, air operated cable hoist. Constant and uniformly even pressure is maintained on the cables, avoiding "jerky" starts or stops when reeving in or out. It is non-slipping and will take up or release to the exact position desired.

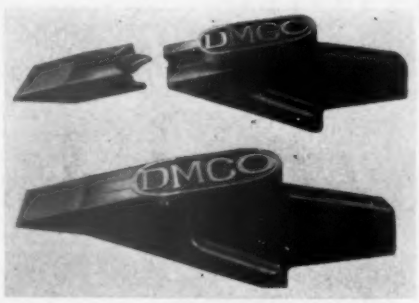
With the Terra-Cobra, braking power is applied by powerful air brakes on the rear of the scraper and equally on both wheels at exactly the same time. There is, therefore, no chance for either brake to "grab." Heavy fast moving loads can be slowed down or stopped in the shortest possible distance with the operator in complete control.

Hydraulically-steered earthmovers.

● Dipper Tooth

The new two-piece dipper tooth which was recently developed by the Daniels-Murtaugh Company, Cedar Rapids, Iowa, presents improvements for this type of equipment which recommends its use on a wide range of digging and loading equipment, such as dippers, clamshell and dragline buckets, and trencher buckets.

The two parts of the "Wear-Sharp Tooth" (patent pending) shown on this page are designated as the "Penetrator Point" and the "Weldapter." The design makes it extremely easy to replace the point, which is double-keyed to the Weldapter and tack-welded. When the point becomes worn, it is readily replaced by simply slipping a new point on the Weldapter and tack-welding at several points along the side and across the end and where the parts join.



Dipper tooth.

The welds merely hold the point in place. The double-key supports, one lengthwise and one crosswise of both parts, takes side thrusts and impact shocks.

NICHOLSON BINS BUILT FOR

Bulk storage of sand, stone, cement, chemicals, and all granular materials.

PLAN NOW

THE NICHOLSON CO.

10 Rockefeller Plaza
New York 20, N. Y.

IT'S ALWAYS IN THE NEWS

You can't keep a consistent record-breaker like AMERICAN Crushers out of the headlines.

"AMERICANS" hold and *improve* the high marks for continuous operation under the severest working conditions, tonnage output, and all 'round economy.

Write for Bulletin

AMERICAN PULVERIZER CO., 1059 Macklind Ave., St. Louis 10, Mo.

The Spotlight

IS ON

THE

GILSON MECHANICAL TESTING SCREEN

The compact, ingeniously designed GILSON TESTING SCREEN assures a controlled product guaranteed to meet specifications. Test samples of crushed stone, gravel, slag, etc. are carefully sized through five test screens by a smooth and quiet vibration, separating 100 pounds of sample in 5 minutes or less. Eliminate errors that happen through "sizing by guess"—write today for complete information on the GILSON TESTING SCREEN.

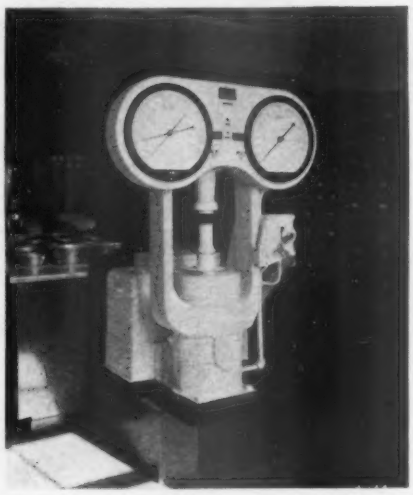
THE GILSON SCREEN CO.

P. O. BOX 186 MERCER, PA.

● Compression Tester

The Baldwin Locomotive Works, Philadelphia, has brought an important change in cement technology with the introduction of the Southwark-Emery 90,000 pound compression testing machine for cement and concrete.

This self-contained unit is designed primarily for compression testing of the 2-inch by 2-inch cube and the 3-inch by 6-inch cylinder, but the dimensions of the working space and the hydraulic stroke are large enough to permit a wide field of usefulness. The Southwark-Emery 90,000-pound compression testing machine employs the packed ram principle and the standard Emery capsule. For compactness and simplicity the capsule is built into the loading ram. Nevertheless there is absolutely no hydraulic connection between the loading and the indicating systems. Eccentric loads are compensated for within the capsule itself, without introducing friction, by an annular stayplate which acts in conjunction with the bridge ring. One initial load spring, central with the capsule, is built into the unit.

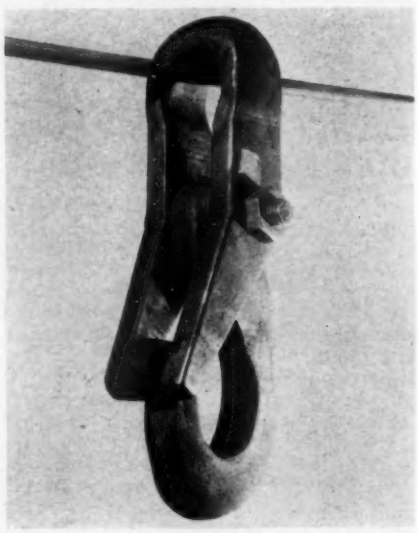


Compression tester.

The capsule is connected to two 16-inch Emery dials, one reading to 90,000 pounds, the other to 10,000 pounds. Equipment includes recoil shock valves, maximum hand, zero adjuster, and load rate pacing discs of the standard turntable type with individual Telechron motor drive. The 90,000-pound dial is graduated by 200-pound divisions, and the 10,000-pound dial by 20-pound divisions. These machines are provided with safety devices including overload fluid relief valve in the pump line, overtravel limit switch on the ram, overload electric cut-out on the low range dial, and recoil shock valves in both dial lines.

● Hoist Hook

A heavy duty hoist hook that safely handles loads up to 200 tons has been announced by the American Chain Ladder Company, New York. The ACLC HOIST HOOK keeps hoist and a load in true alignment, while the patented shoulder and lip eliminates load slippage and hook straightening. Even should the heavy pin shear, the weight of the load would continue to hold on the safety shoulders and lips. These self-locking shoulders and lips, incidentally, were carefully designed to clear hatches, cornices and other protuberances without snagging.



Heavy duty hoist hook.

Builders Iron Foundry, and its affiliates, Builders-Providence, Incorporated, Proportioneers, Incorporated, and Omega Machine Company, Providence, Rhode Island, recently held a triple celebration to commemorate the company's 125th anniversary, to honor 270 employees having from five to fifty-four years of service, and to celebrate the award of the fifth Army-Navy E just received by the concern.

The Chain Belt Company of Milwaukee has just received another Army-Navy "E" star. This makes the fourth time that official commendation from Washington has been directed to this company, since it received its original award September 19, 1942.

WEIGH THIS WAY

It's Faster

SCHAFFER POIDOMETER

One of several Poidometers on duty in the Ludington, Mich., plant of Dow Magnesium Co.

For Weighing, Feeding and Proportioning

SCHAFFER Poidometers combine automatic, speedy material handling with accuracy and durability in operation. They insure high product uniformity, record output, and minimum operating costs.

Poidometers are available with recording devices for registering total tonnage, and remote controls for indicating feed rate, amount delivered, and for changing feed rate.

Write for Catalog No. 5

SCHAFFER POIDOMETER CO., 2828 Smallman Ave., Pittsburgh 22, Pa.

TRADE NOTES

The men and women employees of the Koehring Company, Milwaukee, Wisconsin, on January 13, received for the third time the Army-Navy Production Award for high achievement in the production of war materials. Under-Secretary of War Robert P. Patterson, added a second white star to the Company's "E" Flag as a symbol of continued achievement in producing materials essential to the war effort.

F. S. Cockburn has been re-appointed field representative for the Allis-Chalmers Manufacturing Company in Peru, according to an announcement by Paul Dietz, export manager for the company's general machinery division.

Mr. Cockburn acted as an Allis-Chalmers representative in Peru for a number of years prior to the outbreak of the war. In his new assignment he will work in conjunction with the company's distributors for Peru, the Peruvian Trading Corporation, Ltd., of South America. He will be located at Lima, Peru.

Under the terms of an agreement between the Ellernan Company of Salt Lake City, manufacturers of the Ellernan calciner, and the Power Gas Corporation, Ltd., of Stockton-on-Tees, England, the British firm will handle these calciners in the British Isles, Australia, India, and South Africa after the war.

Franklin P. Hoadley

Franklin R. Hoadley was recently elected president of the Farrel - Birmingham Company, Incorporated, of Ansonia, Connecticut, and Buffalo, New York.

Mr. Hoadley has been associated with Farrel-Birmingham Company since his graduation from Yale University in 1914. During World War I he served in this country and abroad as a lieutenant in the ordnance department. He returned to Farrel-Birmingham in 1918, became foundry manager in 1919, and in 1930 was elected vice president and a member of the executive committee.

William B. Merger, after a tour of duty as chief of the conveyor and mechanical power transmission equipment section of the material handling division, W.P.B. has returned to the Boston office of Robins Conveyors Incorporated.

Norman E. Sears, formerly with the Atlanta Powder Company, and for some years Salt Lake City representative for Worthington Pump & Machinery Corporation, is now federal explosive investigator for the U. S. Bureau of Mines, with headquarters in that city.

Bernard J. Larpenteur has been transferred by The Dorr Company from New York to Chicago, where he is in charge of metallurgical sales in that territory.

M. E. Miller

M. E. "Cap" Miller was recently promoted from district representative to central sales manager of R. G. LeTourneau, Incorporated, with offices in Peoria.

A veteran of the construction field, Mr. Miller joined LeTourneau in 1934 at its Stockton, California, western office.

In his new position, Mr. Miller will supervise the activities of LeTourneau district representatives in approximately twenty middle-western states. He succeeds Howard L. Stilley, who left here on March 15 to become manager of the Soulé Equipment Company, exclusive northern California distributor for R. G. LeTourneau, Inc.

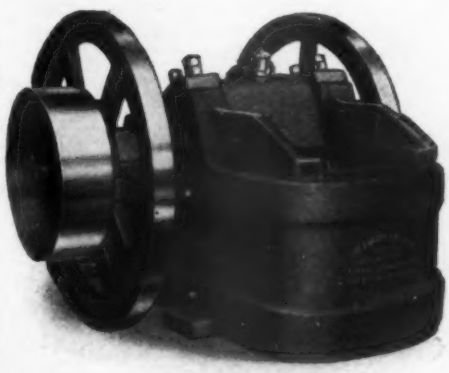
H. R. Pittman has been named as treasurer of Vulcan Iron Works, Wilkes-Barre, Pennsylvania, to succeed W. W. Moss, who resigned.

Russell H. Foss was recently appointed district sales manager for the New York district of Hazard Wire Rope Division of American Chain & Cable Company.

Aldon J. Anderson, assistant to the general manager of Western operations, U. S. Smelting, Refining & Mining Co. since 1938, has left the company to establish the Equipment Supply Co., Salt Lake City, to specialize in industrial and safety equipment and supplies.

FARREL BACON CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service.



EARLE C. BACON, Inc.
17 John St. New York, N. Y.

(Upper View) Sauerman Slackline Cableway moving gravel from wet pit to screening plant. (Lower View) Sauerman Scraper reclaiming crushed rock from stockpile.

SLASH COSTS
in moving materials

Ask any operator of a Sauerman Scraper or Cableway and he will say this is the cheapest method of moving materials from pit, bank, pond or stockpile.

These machines dig, haul and dump automatically in one operation and are adaptable to a great variety of ground conditions.

Because they need only a single operator, consume little power in operation, and are easy to keep in good running order, they cut costs to the bone.

Sauerman engineers will gladly study your digging or stockpiling problems. Their advice may save you money and will be given free. Write for our catalog and tell us about your problems.

SAUERMAN BROS., INC.
534 S. Clinton St., Chicago 7, Illinois

SAUERMAN
Long Range Machines

R. P. Tyler

R. P. Tyler has been appointed general sales manager for Macwhyte Company, wire rope manufacturers, Kenosha, Wisconsin. He is widely known throughout industry, having been sales manager for A. Leschen & Sons Rope Company, of St. Louis, and prior to 1940 in sales and engineering capacities with John A. Roebling's Sons Company, of Trenton, New Jersey.

H. E. Sawyer, formerly general sales manager as well as vice president and treasurer of Macwhyte Company, will continue as vice president and comptroller.

With the acquisition of the Ransome Machinery Company line of concrete machinery, Worthington Pump and Machinery Corporation becomes one of the nation's largest manufacturers of construction equipment. Official announcement of this purchase was made at the January meeting of Associated Equipment Distributors.

C. F. Oechsle, Worthington's assistant vice-president, has been placed in charge of the Worthington-Ransome construction equipment sales organization, with headquarters at Holyoke, Massachusetts. He will be assisted by W. F. Lockhardt, sales manager of Ransome Machinery Company located at Dunellen, New Jersey, and W. J. Fleming, field sales manager, located at Holyoke, Massachusetts. Five regional offices located in New York, Washington, D. C., Cleveland, Chicago, and San Francisco will afford nation-wide service to industry.

In keeping with the post war program projected by Mr. John H. Odenbach, president of the Odenbach Holding Corporation, owners of the Odenbach Shipbuilding Corporation of Rochester, New York, and the Florida Shipbuilding Corporation of Miami Beach, Florida, Mr. Edward A. Calderon, formerly chief of the Bunkers and Ship Stores Section, Bureau of Supplies, Foreign Economic Administration, has been engaged to represent the Odenbach Holding Corporation as their Pan-American representative.

C. Kier Davis

C. Kier Davis, President of Athey Truss Wheel Company, Chicago, Illinois, died as a result of injuries received in an automobile accident which occurred in Chicago on March 7, 1945. He became associated with the Athey Company in 1936 as secretary and treasurer. In 1937 he was made a director of the corporation; and since October, 1940, he had served as its president.

Willard Walker, vice president of Mack-International Motor Truck Corporation, has been appointed to the managerial post of the greater New York division it was recently announced by C. T. Ruhf, president of Mack Trucks, Inc.

Gilbert H. Gaus has recently been appointed manager of the Gardner-Denver Company's New York branch office at 76 Ninth Ave. He succeeds G. V. Leece, vice-president, who has been placed in charge of the company's export division.

The Eimco Corporation, Salt Lake City, announces that all filtration sales testing and engineering is now being handled by its Chicago office and laboratory in the Conway building, under the direction of P. O. Richter, manager of the filtration division. For the past three years tests have been made in this laboratory on many materials including cement slurries, clays, etc., and producers are invited to submit samples of material for testing without obligation. Future plans call for an even larger and more complete laboratory.

National Powder Company, Eldred, Pennsylvania, has become a recipient of the coveted Army-Navy Award. It was presented to the company on March 6, for excellence in war production. In the name of company's proud employees a folder with this message was distributed.

Andrew C. Perkins, president of the Georgia Iron Works, Augusta, Georgia, died recently.

This new double-impeller crusher will produce from 100 to 150 tons per hour of material passing 80% through a 1-inch mesh.

It's compact in design, light in weight (12 tons), and saving in power (from 50 to 75 horsepower drives it). And, above all, it's

Adaptable to portable or stationary work.

Write for complete information.

NEW HOLLAND NH MACHINE CO.

NEW HOLLAND, PENNSYLVANIA

PERFORATED METAL SCREENS

FOR SAND, GRAVEL STONE, ETC.

Manufactured exactly to your specifications.

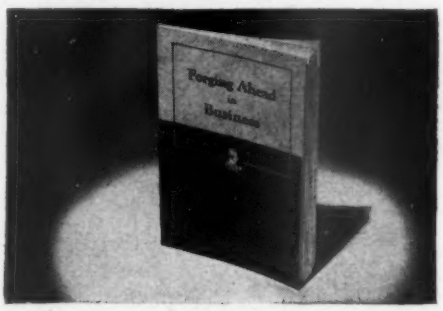
Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices.

Prompt Shipment

CHICAGO PERFORATING CO.

2435 W. 24TH PLACE CHICAGO, ILL.

Telephone CANAL 1459



Every Ambitious Man in Industry Should Read this Free Booklet!

"FORGING AHEAD IN BUSINESS" contains FACTS for all thoughtful, forward-looking men; it has a message of particular interest to *technical men.*

This 64-page booklet, of which more than 3,000,000 copies have been circulated, outlines a definite plan of training for your future progress in industry.

Said one man who had sent for it:

"In thirty minutes this booklet gave me a clearer picture of my business future than I have ever had before."

Fill in the coupon below and this helpful manual will be sent to you by mail and without cost.

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Dept. 278, 73 West 23rd Street, New York 10, N. Y.
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Please mail me a copy of the 64-page book—"FORGING AHEAD IN BUSINESS."

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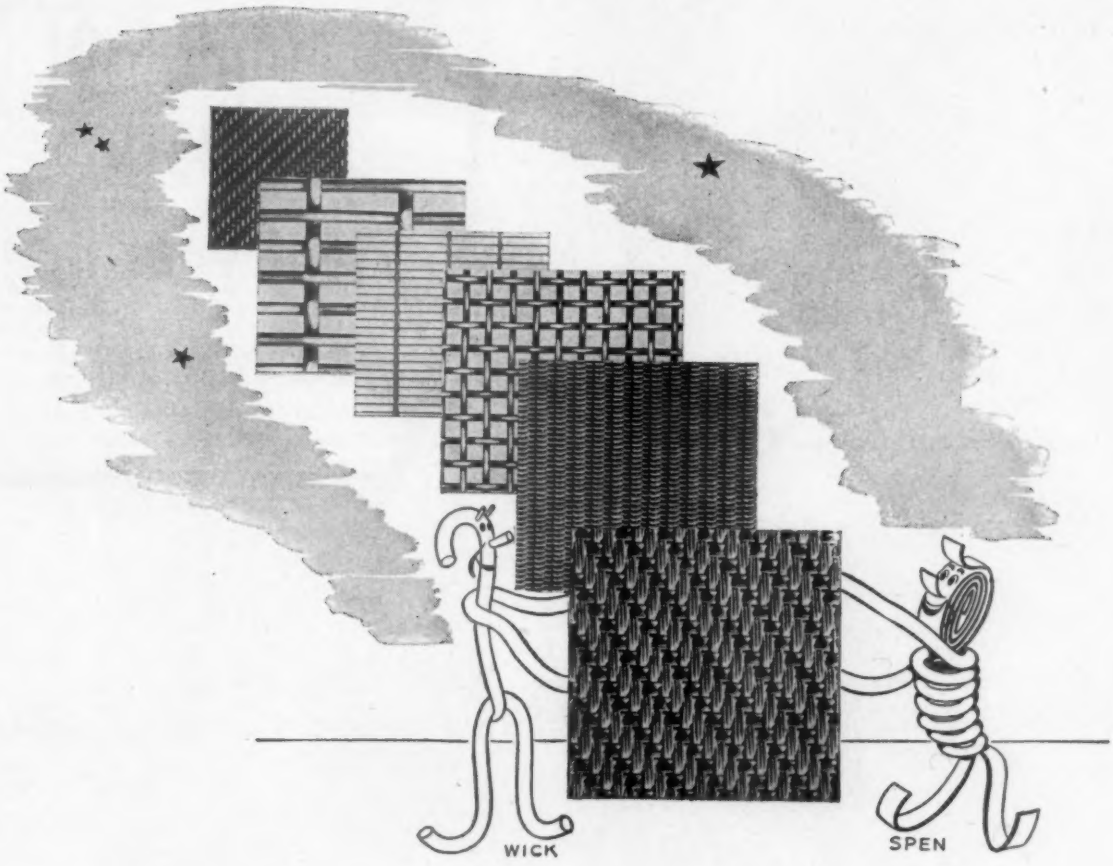


WICK and SPEN make Wire Cloth in the weaves to meet your needs . . .

This Free Guide Will Help You

It contains over 151 illustrations, charts, diagrams, tables of wire sizes, meshes, weights and screen capacities. Send your request to Mechanical Specialties Div. Wickwire Spencer Steel Company, Sterling Street, Clinton, Mass.

Whether yours is a new industry or one of the 100 for whom we now make wire cloth we are confident that we can meet your requirements.

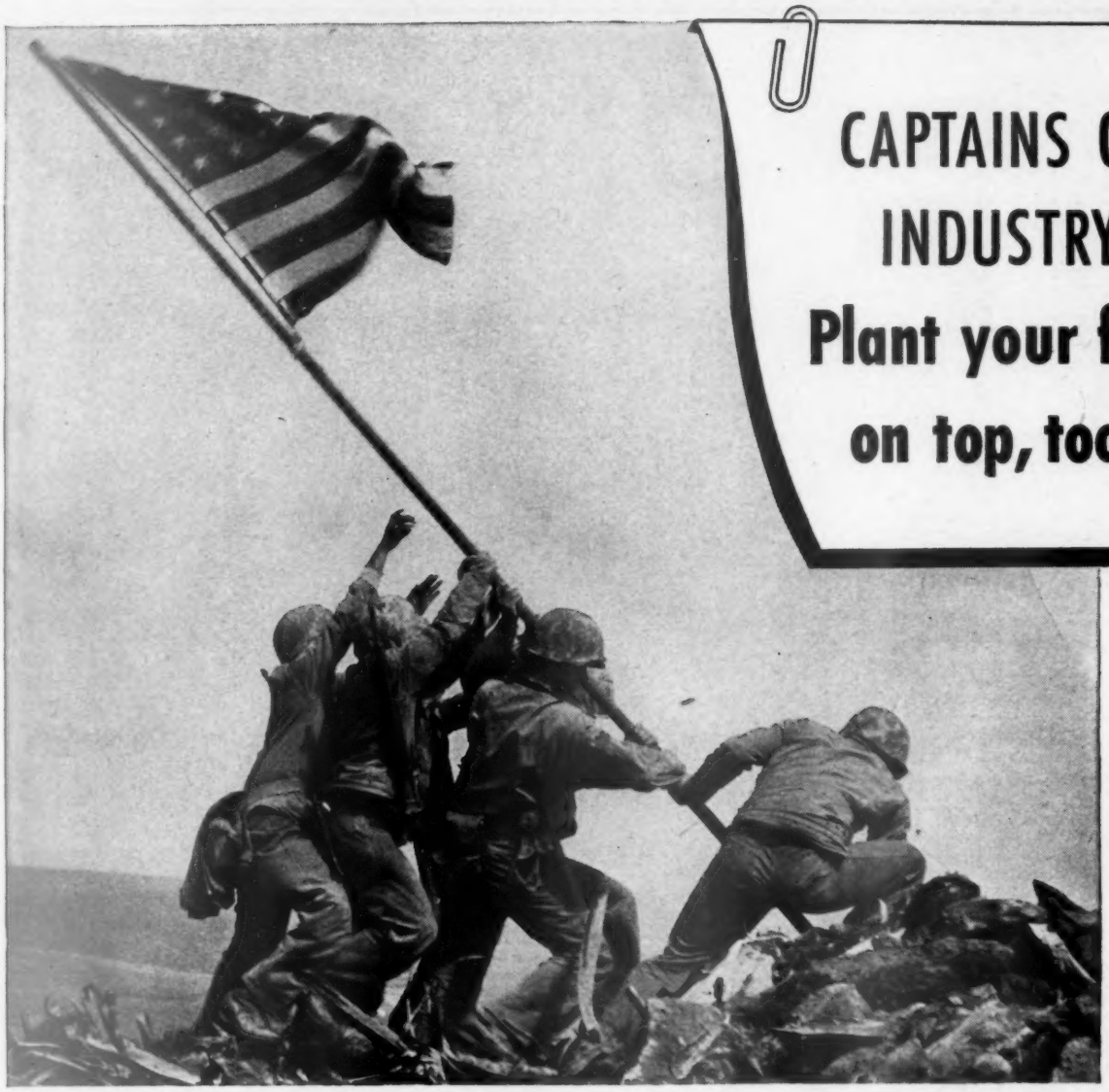
This confidence is based upon 87 years of experience in the manufacture of wire cloth and upon our ability to meet specifications for a dozen different types of coarse and fine weaves in all commonly used metals. We weave wire cloth from 100 mesh to the square inch to as open as 4 inch space—for screening, filtering, separating, grading, cleaning and processing . . . and to give longest service under chemical action, corrosion, abrasion, moisture or high temperature.

If you have a wire cloth need send your specifications to Wickwire Spencer for prompt, satisfactory service. Mechanical Specialties Division, General Sales Office and Plant, Sterling Street, Clinton, Massachusetts.

WICKWIRE SPENCER STEEL COMPANY

EXECUTIVE OFFICES—500 FIFTH AVENUE, NEW YORK 18, N. Y.

Abilene • Buffalo • Chattanooga • Chicago • Detroit • Houston • Los Angeles • Philadelphia • San Francisco • Tulsa • Worcester



CAPTAINS OF INDUSTRY Plant your flag on top, too!

This year we've got to make 2=3!

This year we've got to make 2=3! We've got to lend Uncle Sam in 2 chunks almost as much as we lent last year in 3. Which means that, in the approaching 7th War Loan, each of us is expected to buy a BIGGER share of extra bonds.

The 27 million smart Americans on the Payroll Savings Plan are getting a headstart! Starting right now they are boosting their allotments for April, May and June—so that they can buy *more* bonds, and spread their buying over *more* pay checks.

Our Marines went over-the-top at Iwo Jima in the greatest, and hardest, battle in the Corps' history. Now it's *your* turn! Your quota in the 7th is needed to help finish this war, sidetrack inflation, build prosperity. So, captains of industry, plant your flag on top—like the Marines at Iwo Jima!

★

CAPTAINS of INDUSTRY—here's your *Check List* for a successful plant drive:

- ★ **Get your copy of the "7th War Loan Company Quotas" from your local War Finance Chairman. Study it!**
- ★ **Determine *your* quota in E Bonds — the backbone of every War Loan.**
- ★ **Arrange for plant-wide showings of "Mr. & Mrs. America"—the new Treasury film.**
- ★ **Distribute "How to Get There"—a new War Finance Division booklet explaining the benefits of War Bonds.**
- ★ **Circulate envelopes for keeping bonds safe.**
- ★ **Display 7th War Loan posters at strategic points.**
- ★ **And—see that a bench-to-bench, office-to-office 7th War Loan canvass is made.**

★

The Treasury Department acknowledges with appreciation the publication of this message by

PIT and QUARRY

★ *This is an official U. S. Treasury advertisement prepared under the auspices of Treasury Department and War Advertising Council* ★

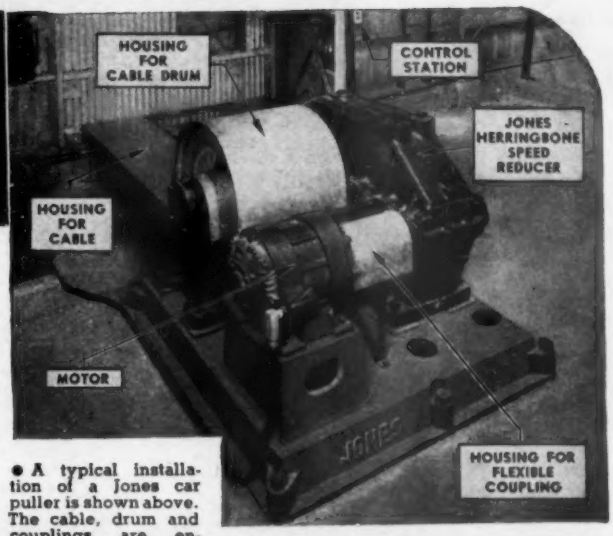
For spotting your cars- JONES CAR PULLERS

YOU will be surprised how much time can be saved in the spotting and switching of cars by using a Jones car puller. These sturdy, compact units will speed up car handling to the point where they soon pay for themselves in the saving of time and labor.

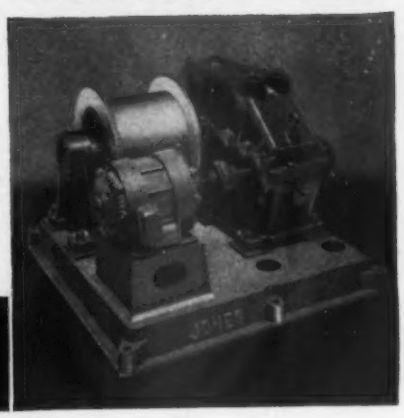
These car pullers are built by Jones as complete units with motor included if desired, or with base to take standard motor, as supplied by the purchaser. The cable drum is driven by a Jones triple reduction Herringbone speed reducer and the control station may be located at a point to give the operator a clear view of the tracks and spotting positions.

Even in plants where comparatively few cars are handled it has been found that a Jones car puller more than pays its way. Prices and complete information will enable you to judge whether such an outfit might pay out in your plant. Write for complete information.

W. A. JONES FOUNDRY & MACHINE CO.
4441 Roosevelt Road, Chicago, Illinois



● A typical installation of a Jones car puller is shown above. The cable, drum and couplings are enclosed by sheet metal housings as an extra precaution in this installation to eliminate all hazard from moving parts.



● A complete Jones car puller unit. These outfits are for use with wire rope and are manufactured in a wide range of capacities to suit the number of cars to be handled in each plant.

Jones HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS
CUT AND MOLDED TOOTH GEARS • V BELT SHEAVES
ANTI-FRICTION PILLOW BLOCKS • PULLEYS
FRICTION CLUTCHES • TRANSMISSION APPLIANCES

WELLMAN
Williams BUCKETS...
Are Lighter, Stronger Give Longer Service

Now *all* Wellman Buckets are welded rolled steel construction. Clamshell, Dragline, and Custom-built types—3/8 to 16½ yd. capacities.

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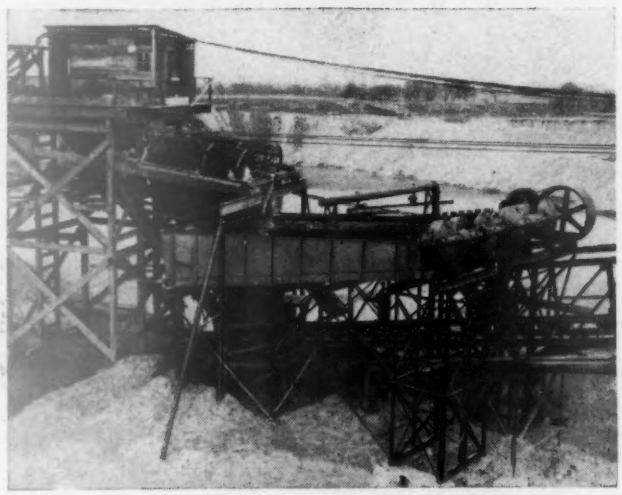
THE WELLMAN ENGINEERING CO.
7014 Central Avenue • Cleveland 4, Ohio
Sales and Service Agencies in Principal Cities

McLANAHAN

improved
STEEL LOG WASHERS

Insure Greater Capacity . . . Lower Costs . . . Clean Products . . . Constant Demand and Higher Prices with Less Stripping



Three 30' Heavy Duty Double Logs with McLanahan Drag Washing Sand and Gravel in a large Mid-Western plant.

Here are a dozen reasons for McLanahan Steel Log Washer Superiority . . .

1. Each electrically welded steel log with welded bases driven separately.
2. Oversize steel log shaft gudgeons.
3. No twisting, sagging, or warping.
4. Improved interchangeable and reversible paddle arrangement.
5. All renewable bronze bushed bearings in discharge end.
6. Shafts, bearings, and steel gears held rigidly in safety housing and running in oil.
7. Rear bearings adjustable.
8. Adjustable overflow and discharge spouts.
9. Industrial lubricating fitting.
10. V or flat belt drives.
11. Minimum water requirements.
12. All self-contained in steel box ready to place on foundations.

Descriptive Bulletins On Request

McLANAHAN & STONE CORPORATION

Pit, Mine and Quarry Equipment Headquarters
Since 1835
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Quarry to Plant

at Lowest Handling Cost

on

Continental

Belt Conveyors

ECONOMY AND SPEED

is the keynote in handling rock in this modern rock quarry.

Continental belt conveyors are meeting the demands for more and more rock—day in and day out.

Whether you need a single replacement idler or a complete installation, Continental can fill your requirements. All types of accessories, such as pulleys, bearings, take-ups, hold-backs, speed reducers, belt cleaning brushes, V-belt and roller chain drives can also be furnished.

Call on Continental!

Industrial Division

CONTINENTAL GIN COMPANY

BIRMINGHAM, ALA.

ATLANTA DALLAS MEMPHIS

DO A BETTER JOB FASTER

Lightweight

Hendrix Lightweight buckets allow you to move more material faster with your present machines, regardless of their normal capacity.

★ 20% TO 40% LIGHTER THAN OTHER BUCKETS, type for type.

★ ALL WELDED CONSTRUCTION for greater strength and durability.

★ MANGANESE STEEL chains, fittings, and reversible tooth points.

★ GETS FULL LOAD PAY MATERIAL EVERY TRIP—even in wet digging.

★ PERFECTLY BALANCED—handles easier, fills faster, dumps quicker, cleaner.

★ LARGER BUCKET CAN BE USED ON SMALL MACHINE—or on a long boom.

★ 3 TYPES—light, medium and heavy duty, 3/8 to 30 cubic yard size.

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OR ASK YOUR DEALER

HENDRIX
Lightweight **DRAGLINE BUCKETS**

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Low Cost POWER *for Producers of Rock Products!*

POWER FOR
- Sand Drags
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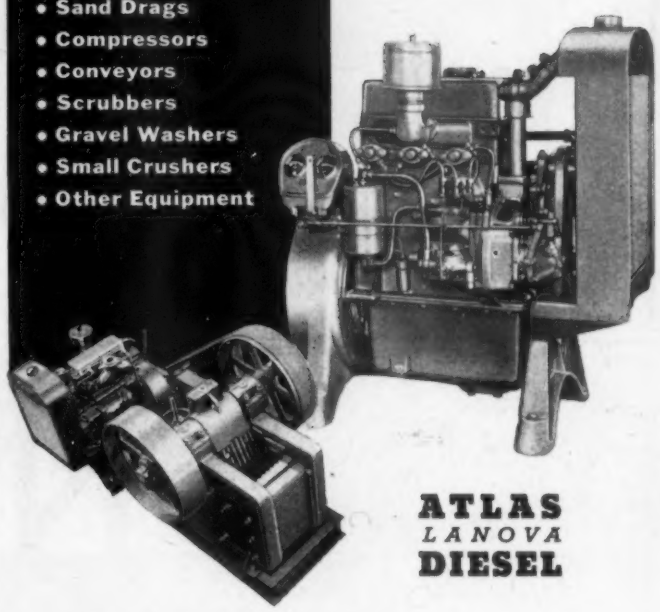
- Conveyors
- Scrubbers
- Gravel Washers
- Small Crushers
- Other Equipment



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• Atlas offers the pit and quarry field a low-operating-cost diesel engine . . . designed to give more power per dollar. This engine . . . the Atlas Lanova . . . is available in 1 and 3 cylinder models, 5 to 15 H.P. It is ideal for powering sand drags, generators, air compressors and a score of other equipment.

When you choose an Atlas Diesel for your power needs, you get more than 40 years of engine building experience . . . a unit that will give lasting, dependable service.

CHECK THESE FEATURES!

Positive Fuel Injection
Efficient Fuel and Lube Oil Filter
Pressure Lubricating System
Aluminum Alloy Pistons
Easily Serviced by Ordinary Mechanic
Close Regulation Governor

• And to power your larger equipment, there are efficient Atlas Diesels in the 30 to 600 H.P. range. Why not get full information on these oustanding engines? Write stating your power needs. We'll send you all the dollar-saving facts on how an Atlas Diesel can help you reduce costs and increase profits. Do it now.

ATLAS Diesel Engines

ATLAS IMPERIAL
DIESEL ENGINE COMPANY

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Branches in Principal Cities, Canada and Alaska

ASPHALT - AGGREGATE ADHESION AS IMPROVED BY CHEMICAL ADMIXTURE

CASE NO. 2

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"We have tried the **NOSTRIP** under rather adverse conditions. One patch was placed in a hole caused by a leaking water pipe under the highway, and although the water is still coming up around the patch after three days the patch itself has remained intact. I believe that it will be **invaluable in making patching material** in the Winter time where a drying plant is not available and that it could materially reduce costs below that of the conventional central drying plant."

*Above is an excerpt of a letter from a County Maintenance Superintendent to the Maintenance Engineer of a State Highway Department. Names on request.

your first drum

is our best salesman!

THE ALL-YEAR ROAD MATERIAL

NOSTRIP

AN ADMIXTURE FOR TAR AND ASPHALT

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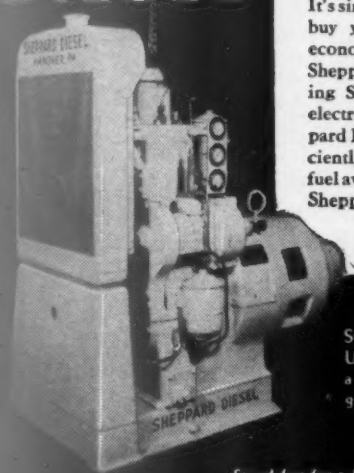
Sheppard

ALL-AMERICAN

DIESEL



Horsepower Horse Sense

It's simply horse sense to buy your electricity as economically as you can. Sheppard Diesel Generating Sets provide cheap electricity because Sheppard Diesels operate efficiently on the cheapest fuel available. Investigate Sheppard Diesels today.

Sheppard Model 7 Power Unit direct-connected to a 5 kw single bearing generator with exciter.

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R. H. SHEPPARD COMPANY

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FOR PERFECT SPREADS USE A BAUGHMAN

The machine that made LIME popular!

New, Wide Chain, K Model. Precision Timken roller and ball bearings throughout. Hardened and annealed cut steel gears — only 2 used in body and 2 in spreader. 24-inch gate for rapid discharge of crushed stone (any size), coal, grain, cinders, etc. Large body capacity.

MANY NEW MODELS — 5 to 20 TONS CAPACITY

Manufacturers of the famous "Hi-Speed" line of Self-Unloading Equipment.

Model K and I, Chain Conveyor Type	Special Low Boy Tractor Spreader
Model H and D, Chain Conveyor Type	Model F, Flat Bed Type
Model E, Belt Conveyor Type	Model J, Transfer Type
Model C, Cinder and Chip Spreader	Model L, Car Unloader
Model N, Dump Body LIME Spreader	Model M, Car Unloader

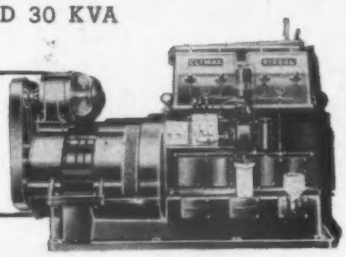
Ask for recommendations—we have a reliable distributor near you.

BAUGHMAN MANUFACTURING CO., Inc.

Factories • Jerseyville, Illinois

Now BIG DIESEL
ECONOMY
in SMALL DIESEL Electric Plants

15 AND 30 KVA



MODEL DE-297 Climax Diesel Electric plant. A D-297 Diesel direct connected to 30 kva Generator.

CLIMAX Diesel Engines—direct connected to generators in Climax Generating Sets—operate on cheap, standard low grade fuel oil—supply abundant electric power and light at less than 1c per kwh.

In two sizes—15 and 30 kva—these sets supply electricity where purchased power is costly or unavailable. They are used for emergency or auxiliary service to reduce demand charges, and to supply *primary* power to rural homes, industrial plants, boats, hotels, and construction and oil field projects.

Engines are 2 and 4 cylinder full Diesels, with maximum ratings of 22 and 44 h.p. at 1200 rpm. Safe, dependable, easy to operate. For complete information and specification bulletin, write Climax Engineering Company, Clinton, Iowa.

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Builder of Climax BLUE STREAK and DIESEL ENGINES
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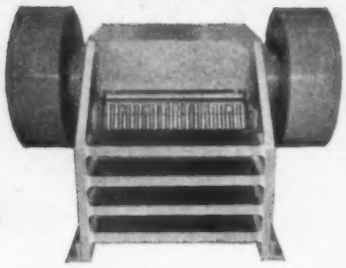
The "ROCKBUSTER"

It's "GOOD MEDICINE" for Tough Rocks



EAGLE Jaw Crusher

Here's a "sure cure" for production headaches in the crushed stone field.

This *rockbuster type* EAGLE machine has the power to crush any kind of rock, and the endurance to supply continuous, low-cost service for many years.

One-piece electric welded steel frame. Reversible jaws and cheek plates.

Sizes up to 1500 tons per day.

Territory open for responsible distributors

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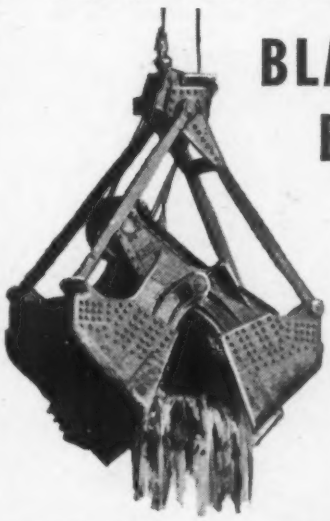
JAW CRUSHERS
IMPACT BREAKERS
PULVERIZERS
CONVEYORS
LOADERS

EAGLE CRUSHER CO., INC., Galion, Ohio

YOU ALWAYS GET
PEAK PERFORMANCE FROM



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Every Blaw-Knox bucket is designed for a specific purpose—the greatest output from your crane.

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BLAW-KNOX BUCKETS in over 100 types and sizes are illustrated and described in Catalog 1757 . . . send for your copy today.

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of Blaw-Knox Company
2004 FARMERS BANK BLDG.
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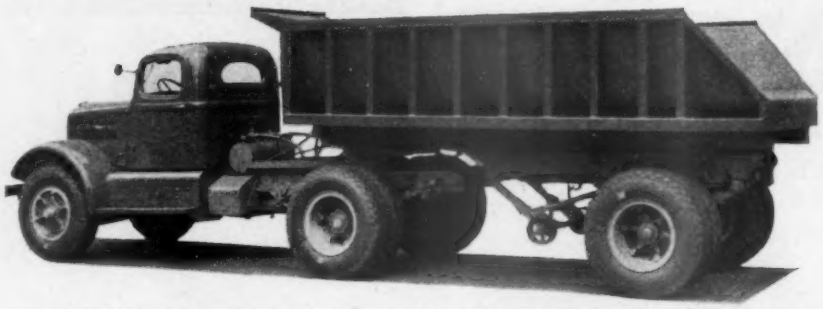
MAKE 'EM LAST

Bulletin 2004 gives complete instruction on the Care and Maintenance of Clamshell Buckets . . . copy on request.

HANSON
YARD AND DOCK CRANES

Mobile, versatile; one man operation; 2 to 30 miles per hour; 2 to 4 ton lift and carry; full 360 degree swing. A thousand uses in fast, economical material handling. *Write for descriptive folder Y & D45.*

THE HANSON CLUTCH & MACHINERY CO.
TIFFIN, OHIO



Model 5SF Semi-Trailer with 10 Cu. Yd. Rock Body

SEMI-TRAILER DUMP UNITS

WITH ROCK TYPE OPEN END OR STANDARD TAIL-GATE TYPE BODIES FOR ALL TYPES OF BULK MATERIAL HAULING ARE AVAILABLE FOR SALE TO APPROVED USERS.

COMPLETE INFORMATION FURNISHED ON REQUEST

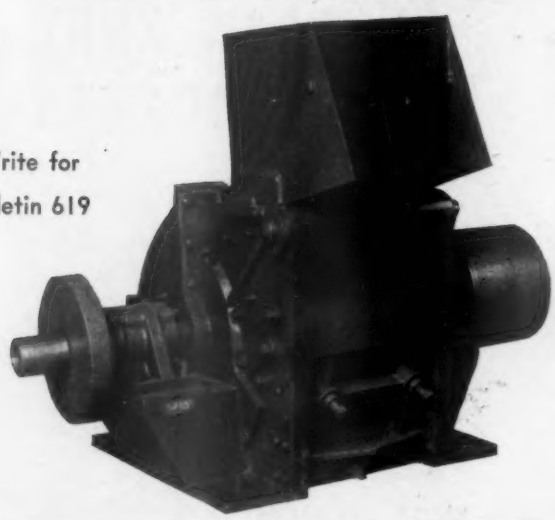
TRUCK ENGINEERING CORPORATION
CLEVELAND 2, OHIO

1 CRUSHER . . . the WILLIAMS "SLUGGER"

reduces **"ONE-MAN"** size stone to 1¼", ¾" or agricultural size in **ONE OPERATION**

Here's the all-purpose hammer type pulverizer for crushing agricultural limestone, concrete and road stone. WILLIAMS "Slugger" provides continuous, high-capacity production of uniformly sized material. Unit is extremely rugged and economical to operate. The ideal crusher for supplying a wide market demand with a small investment. Available in 7 sizes, portable or stationary models.

Write for Bulletin 619



The Williams Patent Crusher and Pulverizer Co.
802 St. Louis Ave. St. Louis 6, Mo.

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OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
PATENT CRUSHERS GRINDERS SHREDDERS

AIR SEPARATORS
ROLLER MILLS
CRUSHERS
GRINDERS
SHREDDERS

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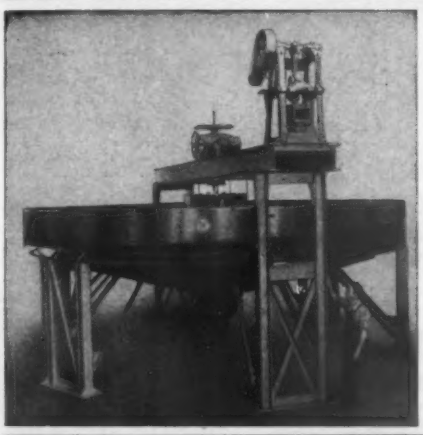

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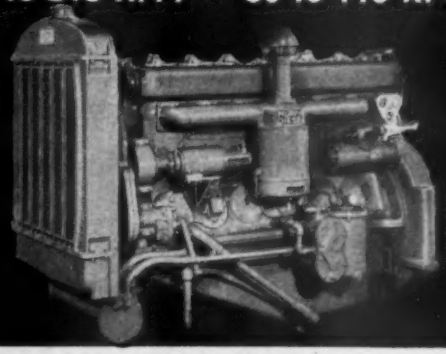

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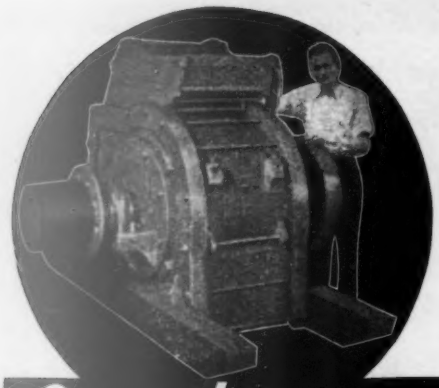

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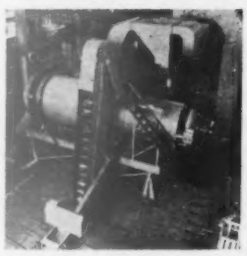

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APRIL, 1945

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Pipe and Products Assn. Meets in Seattle, Hears Timely Talks

The Concrete Pipe & Products Association of Washington held a meeting on February 17 in Seattle to discuss the group's business affairs and listen to an interesting and instructive program.

Speakers included: Frank Barrett, district manager of the Portland Cement Association; James Sullivan, superintendent of the Bremerton Concrete Products Company; and Ralph Young, materials engineer of the Graystone Concrete Products Company.

Officers of the group are: F. M. Kettenring, Seattle, president; J. R. Sherman, Yakima, vice - president; and W. S. Wilson, Olympia, secretary-treasurer. C. M. Howard is the association engineer.

Sherman Concrete Pipe Co. Installs Model R Machine

Recently installed by the Sherman Concrete Pipe Company of Jacksonville, Florida, was a Model R sewer-pipe machine, manufactured by the Concrete Pipe Machinery Company of Sioux City, Iowa. The Model R turns out a range of sizes from 4 inches to 8 inches and has a capacity of 2,400 feet per day. Among the other products which can be made by the new machine are drain tile, underground conduit for electric wires, and units for pre-stressed concrete floor and roof slabs.

Brochure Announces Name of Plasticrete Corp.

Plasticrete Corporation, Hamden, Connecticut, (formerly Hamden Building Tile Company, Incorporated) officially announces a change in its corporate name with one of the most attractive brochures ever brought to our attention. The cover includes a reproduction of a beautiful painting, so attractive that it is hard to imagine anyone disposing of the booklet. Inside the covers will be found a complete description of the physical plant as well as detailed reasons in support of claims for a new and improved product. Changing the name of a long established and well respected organization requires careful consideration. The manner in which the Plasticrete Corporation has accomplished this delicate operation recommends itself to other manufactuerers confronted with the same problem.

Atlas Materials Company Builds Ready-Mix Plant

Atlas Materials Company of Jefferson City, Missouri, announced that construction had begun on its new ready-mixed concrete plant. The new firm, under the management of Richard Schell, will be operated in connection with a paint and glass business.

According to Mr. Schell's announcement, the War Production Board has authorized the most modern equipment for the concrete plant, which will serve a 60-mile radius of Jefferson City. All-purpose ready-mixed concrete produced at the plant will be delivered in transit trucks. In addition, unloading bins, conveying equipment, and similar aids to rapid and economical handling will be furnished to purchasers of concrete. The firm also will carry crushed rock, gravel, and sand.

Cities Fuel Makes Organization Changes

Cities Fuel & Supply Company, Milwaukee, Wisconsin, announce a number of changes in the management of their organization. Lawrence J. Vander Heyden is now general manager. Business continues good in the housing, farm and factory fields. Extensive additions have been made, including addition of a new boiler room and the installation of major equipment additions, including new block manufacturing machine, mixer, conveyors and racks.

J. Scott Parrish, 75, former president of the Economy Concrete Company of Virginia, and for many years an outstanding figure in Richmond's business, civic and social activities, died recently at his home in Richmond after an illness of several months.

Deliver Vinsol-Resin Concrete in Dump Bodies

. . Toledo Producer Combines Scientific Batching Control and New Delivery Method

Left: J. A. Nicholson at his office desk with concrete control system recorder on the wall.

Above: the special batcher scale with operator controlling materials discharge.

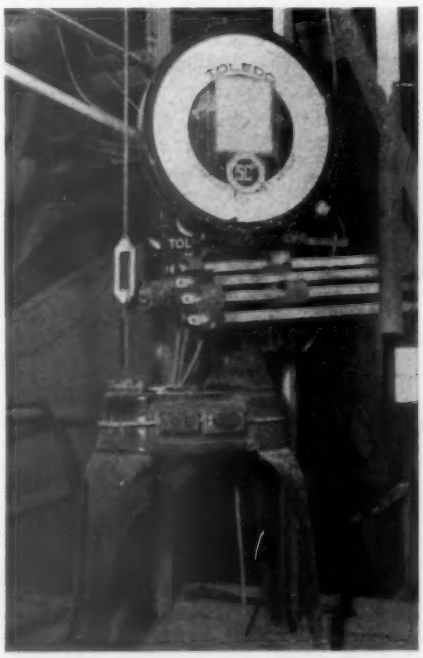
another P and Q exclusive

By W. R. Miller

IN Toledo, Ohio, as in other metropolitan centers, most industrial construction has for years been serviced by ready-mixed concrete hauled in transit mixers. One ready-mixed producer in this area, however, has recently attracted considerable attention to his operation by withdrawing from the truck-mix field, revamping his plant to provide central mixing, and delivering Vinsol-resin cement concrete in a modified form of dump truck.

J. A. Nicholson is the owner of this operation, which bears his name, but he is better known around Toledo as "Jim," and is remembered as football coach of the University of Toledo from 1930 to 1936. After leaving the University he entered the building supply and ready-mixed concrete field. In 1942 he switched 100 per cent. into war work as a subcontractor, furnishing ready-mixed concrete from plants set up at the sites on several large construction projects located within a fifty-mile radius of Toledo.

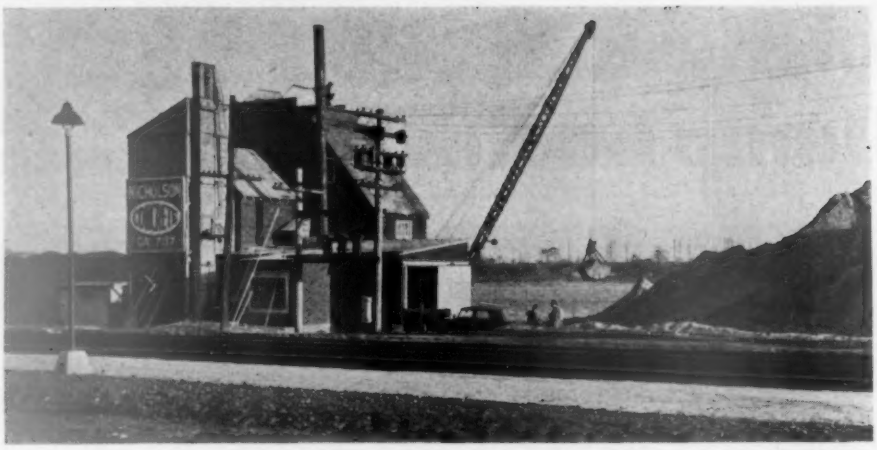
Early in 1944 Mr. Nicholson reopened his yard in Toledo under the new name, the J. A. Nicholson Company, operating a fleet of fifteen horizontal-type truck mixers of 2, 2½, and 3 cubic yard capacity. He had become interested in the problems of Vinsol-resin concrete through experience on an ordnance depot paving project where Vinsol-resin concrete had been tried and later abandoned because of variation in quality. Feeling that lack of control over mixing time was largely responsible for this variation he investigated the possibility of mixing the concrete in stationary mixers and hauling it in dump trucks. The investigation included visits to South Bend, Indiana, where the Kuert Ready-Mixed Concrete Company has been using this method with success for several years, (See PIT AND QUARRY, October 1943, page 66) and tests by an independent testing laboratory on samples of concrete taken from both the top and bottom of a dump truck load after it had been driven distances up to ten miles. These tests showed that in mixes under 6 inches in slump made with Nicholson's aggregates [river sand and slag] and the brand of Vinsol-resin cement used there was little segregation and strengths were uniform and satisfactory.



Another view of the batcher scale with the 3-cubic yard mixer discharging in background.

Convinced of the soundness of dump-truck delivery, Nicholson rebuilt his plant, and installed a 3-cubic yard stationary Smith tilting mixer. Due to war-time restrictions rebuilding of the plant was slow and production of dump truck concrete was not started until July, 1944.

The batching plant consists of a 3-compartment Blaw-Knox aggregate bin and a separate 310-barrel cement bin. A 12-inch-diameter screw, powered by a 10-hp. 2-speed motor, delivers the cement to a special compartment of the weigh-hopper which has a capacity of three cubic yards and is connected to a special full dial Toledo scale in which is incorporated the control features of the [SC]² Precision Concrete Control Method. All ingredients are weighed on this scale. The cement and water are cut off automatically while compensation for the surface moisture in the sand and coarse aggregates is handled automatically by the addition of percentage discs to the scale poises. Fast and accurate determinations of the aggregate moistures are made on an [SC]² Moisture Meter scale. The mixer is both charged and discharged from the front end. Mixing time usually is two minutes. A crawler crane charges the aggregate bin while the cement bin is filled by means of an inclosed bucket ele-



The plant with crane and aggregate stockpile at right.

vator. Both bins plus the boiler house and a large office are fully inclosed into a single unit.

A small fleet of specially-designed dump trucks patterned somewhat after the bathtub models of earlier days, plus some regular dump trucks, are used to haul the concrete. At first the concrete was hauled in regular dump trucks operated under contract with a Toledo trucking concern. It soon became evident, however, that even with Vinsol-resin cement regular dump bodies were not entirely satisfactory. Some concrete stuck in the corners and on uneven surfaces and, under the contract arrangement, the drivers were hesitant about assisting the contractor in getting this out. Attempts were made to chute the concrete using a funnel-type discharge gate bolted on the rear end of the dump bodies with indifferent success. These experiments led to the development of special bodies. The new bodies were made by Daybrook Hydraulic Corporation of Bowling Green, Ohio, and are approximately 5 by 8 feet in size with rounded corners and a double bottom. They are mounted higher than regular dump bodies, hinged at the rear end, and have a small opening with a clamshell gate for intermittent discharge into buggies. A 6-foot chute fastened below this opening swings through a 180-degree radius and permits chuting the concrete for short distances. Auxiliary controls for the hoist and for operating the small gate are located at the left rear end of the truck. The same trucks also haul sand and slag when not hauling concrete.

Sand and two sizes of slag are used but about 80 per cent. of the concrete produced contains the smaller size only. The No. 3 size slag has about 4 per cent. retained on the 1½-inch screen and 90 per cent. on the ¾-inch screen. The No. 4 slag has about 15 per cent. retained on the ¾-inch screen and 98 per cent. on the No. 4 screen. The average specific gravity of the slag is 2.57. The sand has an average fineness modulus of 2.90 and a specific gravity of 2.66. A typical mix consists of 1,440 pounds of sand, 1,630 pounds of slag, 470 pounds of cement, and 275 pounds of water.

Some 4,000 cubic yards of concrete were poured with the new method before the onset of cold weather. During this time remarkably uniform results were obtained. On one job, during a two-month period, samples taken on eight different occasions showed a strength range of only 500 pounds. All cylinders tested between 3,300 and 3,800 pounds for a 5-sack mix. Segregation was not a serious factor. With the advent of cold weather, however, some segregation has been noticed. Whether this is due to heating of the aggregates or to a change in the cement has not yet been definitely determined.

Rear view of body discharging into wheelbarrow.

While concrete has been hauled successfully by this method for distances up to 19 miles, it seems best suited to relatively short hauls. Dump trucks were, of course, discarded years ago for hauling concrete because of segregation. The advent of Vinsol-resin and other air-entraining agents which resist segregation seems to have revived the possibilities of this method. Mr. Nicholson is quick to point out that while this method offers considerable financial advantages to the producer all the bugs have not yet been worked out. Toledo contractors have for years been accustomed to the convenience of truck-mixed concrete. He is frank to admit that Toledo has had good delivery service of truck-mixed concrete from the Kuhlman Brick and Supply Company, the largest concrete producer in the Toledo market. Dump truck delivery has its drawbacks as well as advantages. The new method has not been in use long enough in a competitive market to determine whether the advantages outweigh the disadvantages. Based on his ex-

(*Continued on page* 120)

Concrete being discharged at controlled rate through chute for concrete pavement.

General view of postoffice where 90,000,000 gift packages for boys overseas were handled between Labor Day and Christmas.

New U. S. Overseas Post Office Built of Cinder Blocks in Record Time

The huge new Army postoffice, recently completed on the site of the former Madison Square Garden Bowl in Long Island City, handled more than 90,000,000 gift packages to men overseas for Christmas. As the overseas parcel rush reached its peak, between September 1 and October 15, Colonel Richard E. Eggleton, postal officer of the New York Port of Embarkation, said the personnel numbered 12,000, including 2,000 soldiers.

Substantial operations got under way after Labor Day, it was said by the office of Postmaster Goldman, in charge of civilians. To overcome trouble finding help the postal authorities sought women clerks, about 70 per cent of whom were from Long Island City, Flushing, Jamaica and Brooklyn.

The postoffice is wide and deep (three blocks) for its one-story height. Various sections range in height from sixteen feet at the center front to twenty-nine feet in the rear, over the railroad tracks. One Pennsylvania railway track, where mail was loaded and sent on its way, was first completed. Five run through the building.

Cream colored concrete blocks, of four blended tones, are combined with corrugated steel in the exterior, and window frames are painted aquamarine. There is a border of the color atop sixty-four "monitors" which finish off the roof. These are rectangular ventilation and light devices, like skylights, glass at the sides, but they stand 7½ feet high and are 208 feet long by 12 feet wide.

In its construction approximately 392,000 blocks, supplied by the National Brick Company, were used; the cement used was Duraplastic and other air-entraining types. A total of more than 15,000 barrels of cement were needed for the floor slabs and poured concrete work.

The "spy walks," as workmen termed observation galleries whence concealed postal inspectors watch the operation are a maze of completely inclosed balconies which extend along at least two sides of each room and allow an occupant to walk overhead from the Forty-third Street corner where a parcel comes in to the rear section where it goes out, without obstruction. The galleries have soundproof Celotex floor, and at intervals of 15 feet there are panes of one-way-vision glass. The inspector can look through them over the floor where the parcels are handled but cannot be seen from outside.

The office of Colonel Edgar W. Garbisch, district engineer of the Army Corps Engineers, under whose direction the building was rushed to completion under a seventy-two-day construction contract, could not say what is to be done with the building after the war.

Exterior view, rear, showing exposed cinder block construction, one of five railway tracks that run through the building.

Interior view, of exposed cinder blocks, showing maze of observation galleries used by postal inspectors to watch operations.

Ready-Mixed Concrete Producers Hold Board Meeting in New York

Part Two — Thursday Session

The Thursday morning board meeting of the National Ready Mixed Concrete Association was presided over by Alexander Foster, Jr. (Warner Company, Philadelphia) Stanton Walker, Director of Engineering, first presented his annual report in which he gave a brief outline of the work done during the past year. This included research done and consulting and engineering service provided for members, technical papers prepared, representation on various committees and technical societies, etc. He also described his trip to the West Coast where he not only familiarized himself with local problems but also spoke before several groups of producers. He also mentioned the publication of a booklet on the *Control of Quality of Ready Mixed Concrete* which has been published in limited edition with full publication to be made this year. This publication, he said, will contain additional information on the curing, placing, and handling of concrete.

Mr. Walker then briefly described some of the more important tests made during the year including those on light-weight slag aggregates with standard and air-entraining cements, also other air-entrainment tests including the effects of transportation in both agitator and open-type truck bodies. Additional tests on air-entraining agents and admixtures are scheduled. Mr. Walker also pointed out that most of the tests made for the sand and gravel producers are also of interest to ready-mixed concrete producers.

The meeting was then thrown open to discussion with Mr. Walker presiding with the aid of C. E. Wuerpel, principal engineer in charge of the Central Concrete Laboratory, U. S. Army Corps of Engineers, Mt. Vernon, New York. The latter briefly described some of the work his department has been doing with Vinsol resins used both as admixtures and ground in with the cement. Much of this information duplicated that in the paper which he presented at the convention of the National Crushed Stone Association and which is reviewed elsewhere in this issue. He also described a mortar test which has been developed to make possible quick tests of such concretes. It was found, he said, that a mortar containing about 14 per cent. entrained air corresponds with a concrete with about 4 per cent. of entrained air, but this test is not yet accurate enough to be an accurate and dependable guide. The last change in the specifications of his department, according to Mr. Wuerpel, leaves it up to the district engineer whether the air-entraining agent should be added at the mixer or in the cement. The former method, said Mr. Wuerpel, will probably be the future choice. There is no doubt in his mind that air-entraining cement is the greatest addition to cement technology since the water-cement ratio. The future potentialities of this product, he said, go far beyond the resistance to scaling and the other advantages with which we are now familiar. The research work now being done by his department is entirely with mixer-added agents.

C. E. Wuerpel

Mr. Foster said that the addition of the resin at the mixer would be a boon both to the producer and the customer as the former has the confidence of the latter and an adequate knowledge of cements.

W. Elliott, chief engineer, New York Department of Public Works, said that his department has gone back entirely to the use of standard portland cement without admixtures or additives and he warned producers against the use of these materials until they are perfected. Efforts should now be concentrated, he said, on making good concrete with the cements available.

Mr. Foster said that the air entrainment in concrete made even with standard cements has been and will continue to be a problem for the industry.

Mr. Wuerpel then reviewed some of the past trends in concrete design including the change from dense concrete to the air entraining types. He also pointed out the difference between the air channels in concrete caused by excess water and the unconnected bubbles created by air entrainment. The latter are definitely not channelized and the concrete between the air bubbles is no less dense and impermeable than ordinary concrete. He said that other air-entraining agents than those now on the market will be developed and that the cheapest one will probably find the greatest acceptance. The laboratory, he said, has developed an agent which may prove to have possibilities. He urgently recommended that producers batch such agents like the other concrete ingredients in order to insure a uniform product and said that such concretes should be delivered in agitator trucks whenever possible as the use of mixer trucks does not give adequate control of the mixing time and the slump.

Mr. Wuerpel said that up to 4 or 5 per cent. air entrainment can be obtained without loss of strength by the use of accelerators. He concluded by saying that with the agent developed by the bureau and with 1 per cent. of calcium chloride, and minute quantities of other materials as accelerators, concrete has been made with flexural and compressive strengths 35 per cent. above, and bonding qualities 75 to 100 per cent. over, standard concretes.

Mr. Walker then asked for experiences of producers with open delivery for air-entraining concrete. J. C. McCracken, Builders Supply Company, Louisville, said that limited tests made by his company proved it to be commercially impractical. He said that the segregation was somewhat less than in standard concretes but that it increased with the length of haul and that the concrete had to be reworked before using if the haul took more than 30

minutes. A truck mixer manufacturer's representative then gave a brief picture of what a Toledo concrete producer is doing along this line. This operator, he said, is using dump-type trucks exclusively but believes that they should only be used under certain conditions. This producer's idea of an ideal fleet for the delivery of concrete for all purposes and all conditions in large metropolitan areas was said to include 20 per cent. of high-discharge agitator trucks, 40 per cent. high-discharge open bodies with controlled discharge, and 20 per cent. plain dump bodies. For the drier concretes he is said to favor dump bodies under any conditions.

H. F. Thomson, General Material Company, St. Louis, Mo., mentioned the fact that the present

R. C. Collins

A.S.T.M. specifications make no provisions for the use of dump bodies. His company recently delivered 40,000 cubic yards of concrete for a special project from a temporary mixing plant in end-dump bodies with controlled-discharge gates. The results, he said, were entirely satisfactory. He also mentioned another job, with a short haul on which both dump and agitator trucks were originally used, but after a few hours the contractor asked that only dump trucks be used. Mr. Thomson said that he believed dump trucks to be definitely in the picture under certain conditions but that it is important to use a type of body which will insure full discharge of the load.

J. H. Dixey said that all of the more than 1½-million cubic yards of concrete used for subway construction in New York in 1925-7 was delivered in dump or hopper bodies. In May, 1927, he said, the first central-mixing plant was built and since then only mixer or agitator bodies have been used.

Mr. Wuerpel said that neutralized Vinsol resin can be added to the mixing water for mixing at the job because it dissolves readily. Agents which do not dissolve can be added to the batch at the plant.

The Thursday afternoon meeting was devoted largely to a discussion of merchandising problems. R. C. Collins (Warner Company, Philadelphia), chairman of the merchandising committee, described the reasons for the formation of this committee and the work it has done with the aim of improving the merchandising practices of the industry. William Moore (P. J. O'Connell Company, Boston) then read typical clauses from the committee's report covering subjects which usually give producers the most trouble.

In discussing delays of trucks on the job Mr. Moore said that the March, 1942, ceiling prices hold for waiting time practice also. Robert F. Porter (Harry T. Campbell Sons Corporation, Towson, Maryland) said that his company uses a 4- by 8-inch card on which are the rules for handling, unloading, etc. A card is given to each c.o.d. buyer with the load of concrete. This practice saves much misunderstanding and few object to it. In Philadelphia, said Alexander Foster, Jr. (Warner Company, Philadelphia), most contractors are familiar with the company's rules and any new contractors are informed of them at once. Mr. Moore said that his company sends its rules to all new customers on the price cards.

Regarding the hours of delay and overtime delivery charges, Mr. Collins quoted another producer as saying that the best way is to charge for the concrete at the plant and let the contractor pay for all the delivery time. Mr. Collins said that such a practice would encourage contractors to buy their concrete at the nearest source which would stifle competition. Ray V. Warren (Ready-Mixed Concrete Association of Metropolitan Pittsburgh, Pittsburgh) said that such a practice would make it difficult to tell a buyer in advance exactly what the concrete would cost him, a particular handicap when the customer is a governmental body.

The subject of charging for less-than-full loads provoked no discussion but Mr. Collins ventured his opinion that a producer is entitled to extra compensation for such loads except when they occur at the beginning or the end of a pour.

In a discussion of current specifications Mr. Foster said that specifications should be so worded in their lower reaches that they will prevent a poor operator from cutting his cement content and lowering the quality of his concrete and yet permit a good operator to benefit from his better design and production methods.

Messrs. Collins, Maloney, Moore, and Thomson expressed their opinions on the importance of the ready-mixed-concrete industry to the contractor and the necessity for his being familiar with its problems. The problem of the industry, they said, is how to deliver better concrete faster. Precision control is a big step forward in achieving quality but the customer's coöperation in unloading at the job is necessary if speed is to be made. On a well-organized construction project the concrete is ordered and is ready when needed and this can only be done through coöperation from both sides. Among the rules suggested for the contractor to follow are the following:

Place orders well in advance of the need;

Give full information on location, time, and quantity;

If more than one pour location, give data on all;

Provide good access roads;

Don't require truck to stand in dangerous spots;

Never order more concrete than can be handled promptly, or provide hopper of at least 1-truckload capacity if so ordered.

H. F. Thomson

Mr. Thomson then emphasized the necessity for maintaining the high standards set by the industry and reviewed the efforts made along this line since the association was formed. Every effort is being made, he said, to reach the "irresponsible" producers who are in the minority but can seriously impede the progress of the industry.

Mr. Collins then mentioned the

possibility of national advertising of ready-mixed concrete by the association and cited as examples advertisements prepared by the Portland Cement Association for reaching rural markets. Mr. Walker said that advertisements have been prepared for the use of producers and that copies of these will be distributed by the association to its members. C. W. Shirey (C. W. Shirey, Waterloo, Iowa) said that he has a 1-minute spot radio advertisement every morning at 7:00 o'clock from which he gets much better results than from newspaper advertising. This program is aimed primarily at the farmers near his city but inquiries have been received from the four surrounding states, which indicates that markets are awaiting producers in those areas. According to Mr. Shirey, producers in near cities above told him that his program has helped their sales. The copy, he said, is written by the radio men with his aid. Mr. Ahearn then suggested that all available copies of newspaper and other advertisements be sent to the association to guide it in the preparation of future ads.

In making the closing address of the meeting Executive Secretary Ahearn warned that the O.P.A. may soon ask producers for information on their finances on which to base a decision on whether producers can absorb or must pass possible cement-price increases on to their customers. He stressed the fact that producers need not file their prices with the O.P.A. but that they should have their books ready for inspection. He also expressed his opinion that sand and gravel and ready-mixed concrete will be among the first products released from price control after V-E Day.

STRAYER PORTABLE CONCRETE PLANTS

20 to 40 YARDS PER HR.

Make 20 to 40 yards of specification concrete per hour on the job. One-man operation and a helper to handle cement bags. One hour to set up. Move from job to job. Write for booklet today.

ERIE THE COMPLETE LINE BUCKETS

Hundreds of Erie Buckets are shipped monthly for war uses. Straight line bucket production experience means better buckets for post-war and fast delivery. Investigate the complete Erie line now.

ERIE STEEL CONSTRUCTION CO.
ERIE, PENNSYLVANIA
Aggre Meters • Buckets • Concrete Plants • Traveling Cranes

Nicholson (*Continued from page 116*)

perience to date Mr. Nicholson feels that dump truck hauling of Vinsol-resin cement concrete is practical and that there is a large field for this type of concrete service.

Mr. Nicholson's figures indicate a saving of $0.75 to $1.50 per cubic yard for this method depending upon length of haul and type of work. Three-cubic yard loads are usually carried and, because the trucks are light and fast, he claims that the average job can be serviced with less trucks. For ground slabs, pavements, etc., where the entire tailgate can be opened about two inches and the concrete spread, a load can be discharged in about 30 seconds and little hand spreading is required. Because no water is carried the concrete can not be tampered with after it reaches the job. While the concrete can be chuted short distances, long distance chuting of Vinsol-resin concrete is not feasible because this concrete seems to have a more gluey consistency than ordinary concrete although it can be worked readily. The concrete is noticeably free from bleeding.

Body fully elevated to discharge into wheelbarrow.

For the benefit of those who may be considering this method it should be pointed out that apparently some Vinsol-resin cements when used with some aggregates give undesirable results in segregation, strength or uniformity. Accurate control of aggregate variations and water content are extremely important and constant technical supervision should be maintained. In other words, it would seem inadvisable to enter this field without adequate equipment, trained personnel, and a thorough study of local conditions.

Concrete Pipe Ass'n Appoints New Directors

Effective April 1st, Howard F. Peckworth assumes his new duties as managing director of the American Concrete Pipe Association with offices in the Builders Building in Chicago. Mr. Peckworth comes to his new location from the position of assistant to the secretary of the American Society of Civil Engineers.

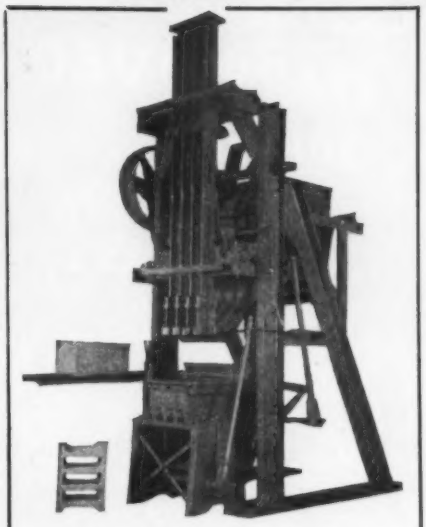
After graduating from Princeton University in 1926 Mr. Peckworth spent fourteen years in responsible charge of heavy construction projects in various parts of the country. He spent a number of those years in subway and tunnel construction in New York City. Later he was field engineer in the construction of Ty-

Howard F. Peckworth

gart River dam in West Virginia, resident engineer on dam construction for the Birmingham Industrial Water Supply Commission, concrete plant designer for Pacific Constructors, Incorporated, at Shasta Dam, California, and senior engineer on the Santee-Cooper project in South Carolina. For the American Society of Civil Engineers, Mr. Peckworth was successively editor of "Civil Engineering" and assistant to the secretary. While in this latter position he has visited and spoken before groups of engineers in all parts of the country.

T. J. Kauer

At the same time T. J. Kauer was appointed assistant managing director of the American Concrete Pipe Association. Mr. Kauer has been



An All-Purpose Machine

The Junior Stripper will turn out more blocks per man than any other hand-operated machine on the market . . . 200 per hour being easily maintained! Nor has quality of output been sacrificed for the sake of speed. Units are uniformly dense, true to shape, of uniform texture.

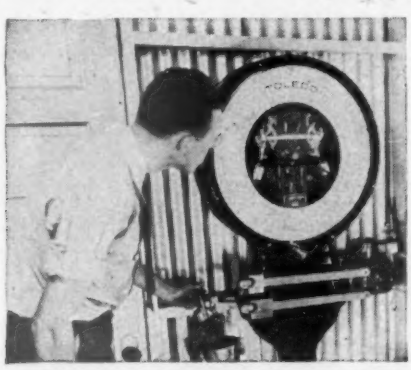
Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers and Joltcrete, Stearns mixers, and Cast Iron and Press Steel pallets, Straublox oscillating attachments, etc. Repair parts for: Anchor, Ideal, Universal, Stearns, Blystone mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager — Columbus, Ohio

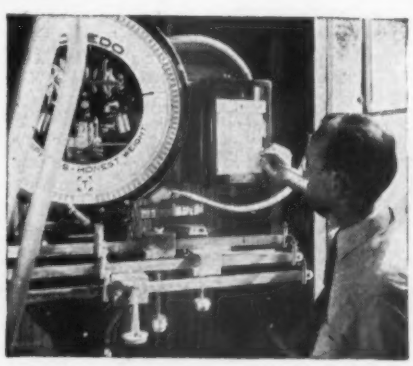
WITH OR WITHOUT AIR ENTRAINMENT

Accurate control in concrete production *improves quality and reduces cost.*

[SC]² PRECISION CONCRETE CONTROL Has never failed to deliver these results. It is the most accurate available control of water content, cement factor and yield. It includes:



The [SC]² Moisture Meter. The only unit capable of determining moisture content in one minute.



The [SC]² Compensator which compensates for the moisture content in every ingredient and graphically records its every operation.

[SC]² CONTROL produces remarkable batch-to-batch and day-to-day uniformity—in quality, slump and yield—and, by doing a better batching job, has always increased profits.

[SC]² CONTROL has pleased and satisfied every engineer, contractor and ready-mix-plant owner who has used it. It can do as much for you. You cannot afford not to investigate this. Write now for our new bulletin on batching plant performance and get full information on what [SC]² CONTROL can accomplish in your plant.

SCIENTIFIC CONCRETE SERVICE CORPORATION
McLachlen Building — Washington, D. C.

IMPROVED
JOHNSON
All-Welded
BUCKETS

DURABLE
STREAMLINED
ECONOMICAL

• Users everywhere are realizing the many profitable advantages of the Johnson Clamshell Bucket, the bucket that combines clean, fast digging with full protection against wear.

All-welded construction eliminates rivets, bolts, and other impeding projections, assuring best balance and better digging quality in all kinds of material.

Renewable lip edge-bar of tough manganese steel combats wear and is easily replaceable in the field.

Needle-bearing mounted closing sheaves permit free-running cable action at all times, bearings are sealed against entrance of dirt and moisture.

Lower sheaves are fully protected by heavy rugged steel plates. All sheaves have large diameter for increased cable life.

General purpose type, 1/2 to 1-1/2 yards capacity in stock for immediate delivery.

Johnson Bucket in open position showing heavy shock-preventing protection plate for lower sheave assembly.

Johnson Clamshell Bucket showing manganese steel teeth designed for smooth speedy digging.

Write today for full information.

The C. S. Johnson Company
Champaign, Illinois

assistant to the president and Washington representative of that association and will continue his office in the Munsey Building, Washington, D. C.

A graduate civil engineer from Ohio State University in 1928, Mr. Kauer was employed for many years as an engineer by the Ohio Department of Highways in Cleveland and Columbus, terminating his employment as chief engineer of design of the department's Cleveland Planning Office in 1940 to enter government service, as an airport paving engineer, with the Civil Aeronautics Administration in Washington.

Mr. Kauer began his employment with the association in Washington, D. C., in 1941.

Cloyd B. Fellabaum, of National Cement Products Company, Toledo, Ohio, indicates that business is holding up in good shape in and around Toledo. Housing and factory improvements are the source of immediate business. Cloyd has recently added three power lift trucks—two for use in curing rooms and one for loading trucks.

• Pipe Machine

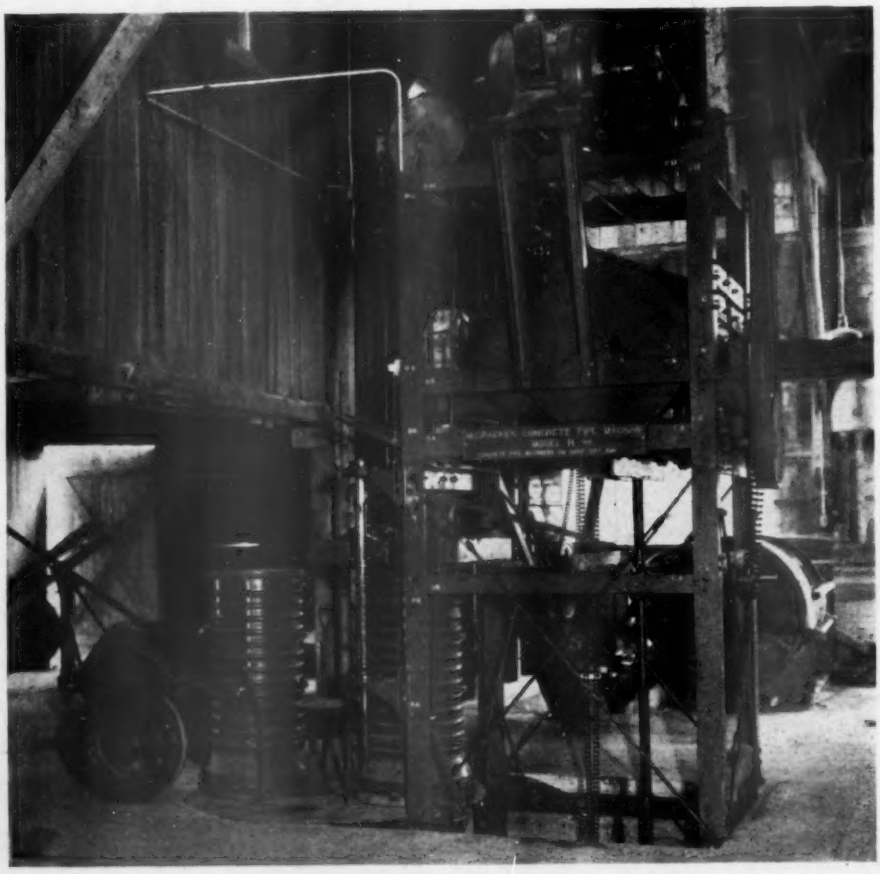
Newest product of the Concrete Pipe Machinery Company of Sioux City, Iowa, the McCracken Model R sewer-pipe machine, exhibits several outstanding features.

By its packer-head process the Model R makes two pipes per minute, 2,400 feet per day, in sizes 4 to 18 inches. It does away with inside molds and packs and trowels the inner surface of the pipe. The packer head packs the wall, while the bell-packer packs the bell and the groove-packer packs the groove. It makes both plain and reinforced bell-and-spigot and tongue-and-groove types.

The introduction of "strips" on the spigot-end obviates the need for pallets; thus, the machine saves buying, handling, and greasing 800 pallets in each size. It also permits double shifts in rush periods without additional equipment. It turns out 100 feet of 6-inch or 16 feet of 18-inch pipe per ton.

A further advantage of the machine is its ability to turn out extra products, such as drain tile, underground conduit for electric lines, and concrete units for floors and roofs. Drain tiles can be made with the same molds in two units 1 foot long or one unit 2 feet long. The tee tile assembly and removable handling steel are features of Prestcrete floor and roof slabs precast on it.

The Model R was designed for the manufacturer equipped to make large sizes of pipes with tamp machines, hand-cast molds, or by the centrifugal process.



New dual packer-head pipe machine.

SECRET WEAPON OVERCOMES HIDDEN COSTS

The improved KRON springless ball-bearing dial mechanism is industry's secret weapon in the war against *hidden costs* in production weighing operations. Designed to determine true weight quickly and accurately in a simple "load and look" procedure, it saves materials, conserves time and eliminates mistakes.

Precision-engineered around this unique dial mechanism, every KRON scale is reliable, fool-proof—assures unfailing accuracy and durability under all conditions of use. It provides the full capacity to weigh, count, measure and batch with an irreducible minimum of lost time and waste motion.

If you have a materials handling problem in high-cost weighing, investigate the benefits of reliable, long-life KRON scales. Write to The Yale & Towne Manufacturing Company, Philadelphia Division, Philadelphia 24, Pa., for your copy of the new catalog of KRON scales made by Yale.

... FULL VISIBILITY ASSURED!

Found only on KRON scales, the exclusive swivel dial head assures full dial chart visibility for accurate readings—eliminates point-of-view differences. Dial head can be rotated through a complete 360° arc at will.

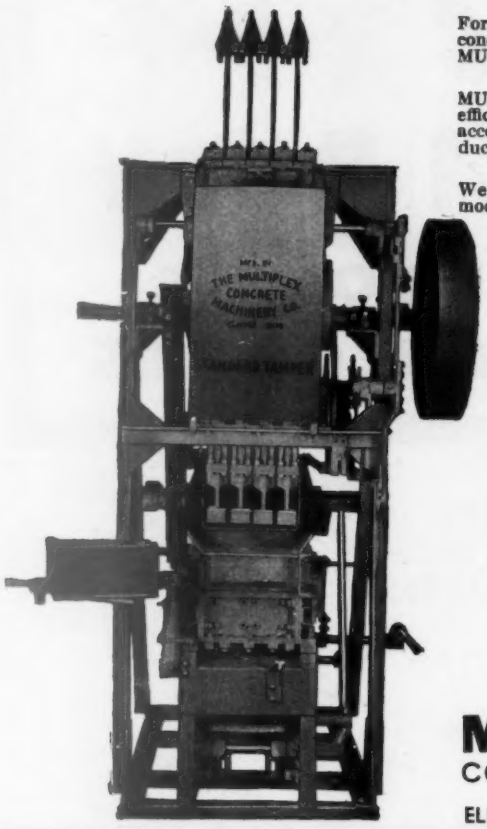
KRON INDUSTRIAL SCALES

FOR WEIGHING, COUNTING, BATCHING, MEASURING, TESTING

MATERIALS HANDLING MACHINERY: TRUCKS—HAND LIFT AND ELECTRIC · HOISTS—HAND AND ELECTRIC

The CONCRETE MANUFACTURER

MULTIPLEX Machines For Postwar Profits



For a Quick "Take-Off" and sustained pace in concrete block output, reserve one of the MULTIPLEX *high-speed* machines.

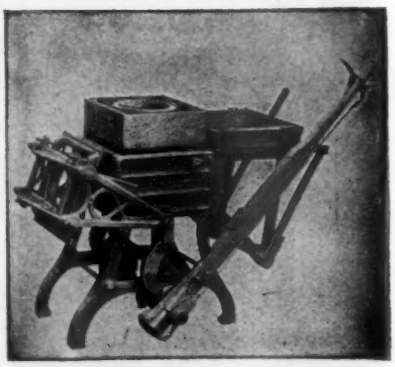
MULTIPLEX offers a wide variety of super-efficient mixing equipment, with all types of accessories necessary for economical mass production.

We can recommend MULTIPLEX units for modernizing *your* plant and enlarging its capacity.

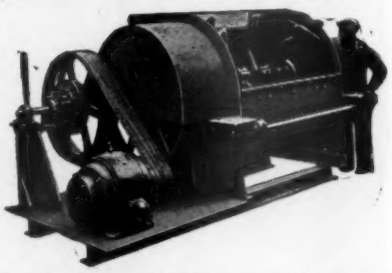
Our universal type MULTIPLEX Standard Tamper for making plain and stripper, or face blocks, on one base. Easily convertible as business expands. Supplied with 4-bar or 8-bar tamper, either power or hand operated.

Write for Booklet describing the MULTIPLEX complete line of concrete mixing equipment, including Double and Single Hand Press Strippers, Power Press Strippers, and Super-Tampers.

MULTIPLEX
CONCRETE MACHINERY CO.
Frank Muenzer, President
ELMORE • OHIO



The MULTIPLEX Flue Block Machine makes ventilated, solid or lightweight units, including all attachments for ventilator and stove pipe openings.



MULTIPLEX Multi-Mixer with reverse screw-type action insures fast and thorough mixing of every batch. Side, end or bottom discharge.

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Every issue of PIT AND QUARRY is full of information you can use in your business. It gives you practical ideas on every phase of your operations.

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My Name.....Title .....

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We Produce .....

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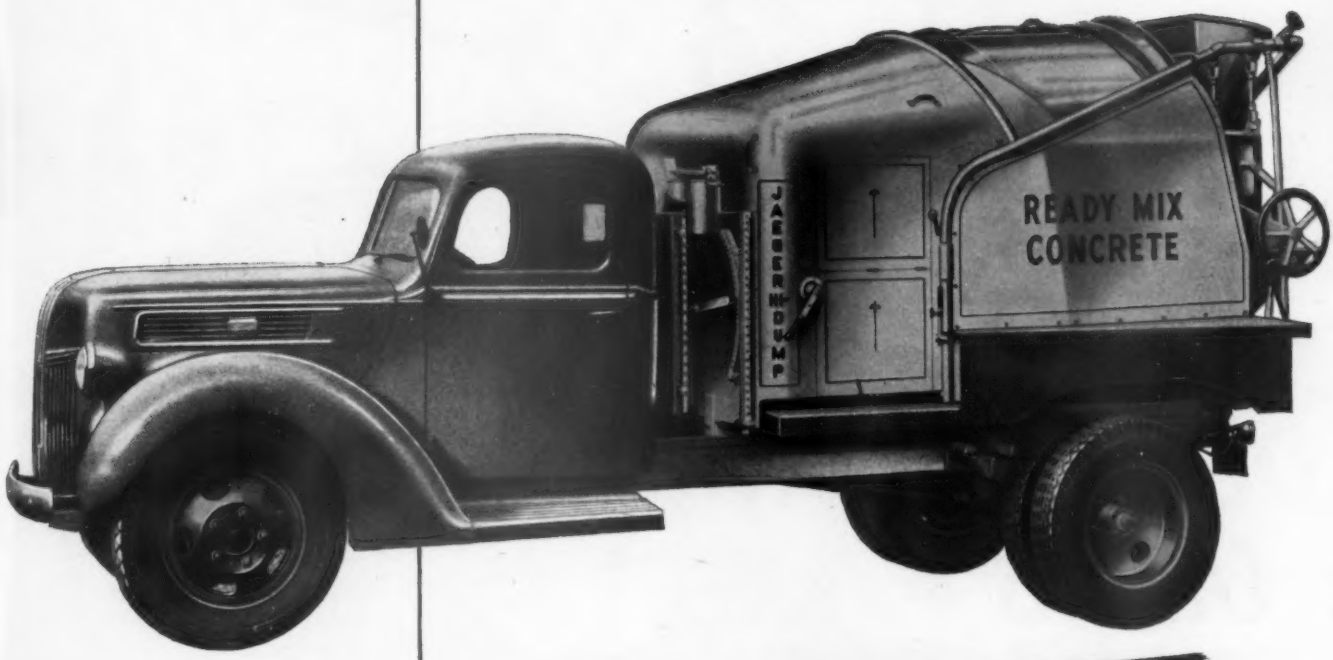
YOUR NEXT TRUCK MIXER



JAEGER 1945 MODEL "HI-DUMP"

New Speed of Charging and Discharging Thru Gated Hopper Always Sealed to Drum

Positively Aligned Center Transmission and Drive

Faster Water Distribution Under Pressure

Over-All Housing Gives More Protection, Quicker Access to Clutch, Engine and Transmission

Outside Slump Meter Shows Approximate Slump Without Stopping or Opening Drum

Many Other Improvements, plus the Exclusive Jaeger "DUAL MIX" Action

the "speed merchant" that will sell another 50,000,000 yards of concrete to America

Have you talked to your Jaeger distributor about what's ahead for "ready mixed"—not only the all-time, all-high demand for concrete that will break loose tomorrow but many important needs that must be served this year, including the new multi-million dollar farm improvement market?

You'll find him fully informed and ready to supply customers according to essentiality with Jaeger Truck Mixers that are as far in advance of former models as "Tomorrow" is ahead of "Yesterday."

(Jaeger 1945 improvements are also available in "LOW CHARGE" models to match present "LOW CHARGE" fleets)

THE JAEGER MACHINE COMPANY

602 DUBLIN AVENUE, COLUMBUS 16, OHIO

CENTRIFUGAL PUMPS AIR COMPRESSORS HOISTS LOADERS

The CONCRETE MANUFACTURER

Designed for a **SPECIFIC PURPOSE**
but useful for any type of
MATERIAL HANDLING

DAYBROOK

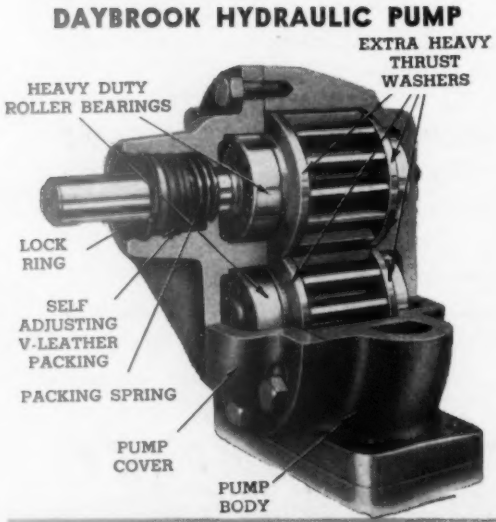
Ruggedly Constructed Hydraulic

DUMP UNITS

Are DESIGNED AND BUILT for any special problem you may have in material handling as well as the most complete line of standard models of hoists and bodies in standard types and sizes available today.

Hoist and discharge control at rear of body.

DAYBROOK HYDRAULIC PUMP



BODY TYPE A-54

AIR ENTRAINED CONCRETE BODY
7DA-HI-LIFT HYDRAULIC HOIST
4 Cu. Yds.

Above body can also be used for the handling of any material

CONSERVE YOUR MANPOWER
INCREASE YOUR PRODUCTION
REDUCE YOUR INVESTMENT
INCREASE YOUR PROFITS

THE DAYBROOK HYDRAULIC CORP., Bowling Green, Ohio

REFINEMENT in FEED

GIVES

ACCURATE MEASUREMENTS

of cement and aggregates by agitators in material hoppers plus thoroughness of mixing insure perfect concrete blocks.

KENT

Continuous Mixer

KENT Two Hopper No. 2½ Mixer. Capacity, 8 cubic yards per hour.

Write for Bulletin

The KENT Mixer is an automatically operating precision machine that supplies a continuous stream of perfectly processed concrete. Just keep the hoppers full, and this unit will set a new production record and profit pace for your block machines. Requires no attention. Durably built for years of low cost service. Several sizes.

The KENT MACHINE CO., Cuyahoga Falls, Ohio

EASY . . . SPEEDY . . . THRIFTY

ERICKSON Power Lift Truck

For better handling of concrete blocks.

BRINGS COSTS DOWN ◀ ▶ **SENDS PROFITS UP**

Full details in Bulletin

It's easy for one operator to handle more loads with less breakage by shifting and piling concrete blocks with the ERICKSON Power Lift Truck.

This is a fast, husky and flexible machine, electric welded all steel construction, and equipped with hydraulic platform raiser and automatic relief valve.

An ERICKSON will take the hardest handling your yard can "dish out", and prove itself your best investment. There's a size for every job.

ERICKSON SPECIAL EQUIPMENT MFG. CO.
109 14th Ave., N. E. Minneapolis, Minnesota

BARRETT LIFT-TRUCKS

ONE MAN HANDLES 48 BLOCKS NO BREAKAGE

Handle your green concrete products the way that more than 800 other concrete products plants do, WITH BARRETT LIFT-TRUCKS EQUIPPED WITH A SUPER-SPRING FRAME AND RUBBER TIRES. Eliminate breakage — joggling out of shape and spoilage. Save time, money and labor by eliminating all unnecessary handling and breakage. Take your blocks direct from the machine to the curing room—with ease and dispatch. One man handles 48 blocks of the 8x8x16 size—or, 32 blocks of the 8x12x16 size.
Write for illustrated circular.

BARRETT-CRAVENS COMPANY
3251 West 30th Street CHICAGO, ILL.
Representatives in all principal cities

CONCRETE BURIAL VAULTS

America's Finest Molds and Lowering Device

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TERRITORY FRANCHISES

BERG VAULT CO.

EQUIPMENT DIVISION
1620 LUCAS HUNT RD.
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Advertise your wants and surplus equipment in

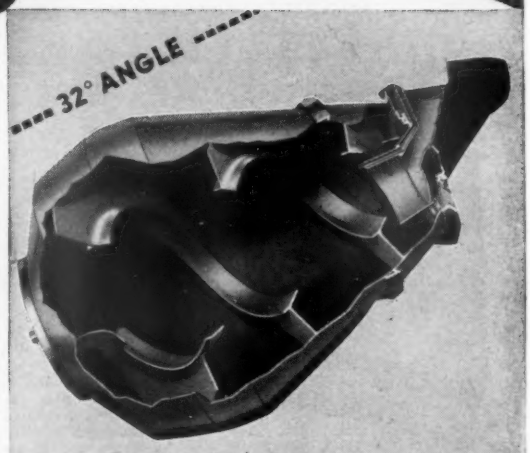
PIT AND QUARRY

POURING CONCRETE UP HILL!

● Smith-Mobile Truck Mixer provides a fast, controlled discharge *even when the machine is on a steep incline.* The patented T-shaped blades scoop up the thoroughly mixed concrete and carry it swiftly to the discharge opening, without segregation. The speed of the drum controls the speed of discharge and a smooth steady flow results, even on an up-grade.

Smith was the FIRST truck mixer manufacturer to introduce a HIGH DISCHARGE model, eliminating the need for a rear-end hoist with its original extra cost, dead load and maintenance expense. And Smith-Mobile pioneered many other time-tested truck mixer features. It will pay you to investigate. Write today for Catalog No. 198-C.

The T. L. SMITH CO., 2887 N. 32nd St., Milwaukee 10, Wis.



The illustration above shows a No. 4 Smith-Mobile, one of a fleet operated by Western Concrete and Equipment Company and used in the construction of a Southern California war plant. This Smith-Mobile is discharging concrete into a high floor hopper. The ramp is a 14° grade and the axis of the mixer drum is 18° from horizontal — yet the speed of discharge is NOT seriously affected by this steep incline.

SMITH-MOBILE

The ORIGINAL HIGH DISCHARGE Truck Mixer and Agitator

BROADCAST P&Q SECTION

FOR SALE—One St. Louis 8" x 12" Jaw Crusher—$510.00.

FOR SALE—One 20" reciprocating plant feeder for clay or stone—$377.00.

VOLZ FIRE CLAY COMPANY
Box 228, Clayton Sta. St. Louis, Mo.

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(2) Factory rebuilt 180 H.P. late model BUDA Diesel Power Units, clutch, 900 RPM.
(1) 100 KVA 220 Volt 900 RPM. Generator.
(3) Brooks Load Luggers, late model CH-200 with 2 yard buckets. Bargains at $600.00 per set.
(1) No. 10 K. Allis-Chalmer and (1) 13-B. Tellsmith Gyr. Crushers.
(1) I. R. Portable Compressor, two-stage, 160 cu. ft.
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(1) Bucyrus-Erie 10B, shovel-dragline, ⅝ cu. yd.
M. WENZEL, 2136 Jefferson, Kansas City, Missouri

DIESELS

ROBERT SCHOONMAKER
Port Washington, Long Island, N.Y.
Phone Roslyn 1220

WE WANT TO CORRESPOND WITH A PARTY INTERESTED IN RENTING OUR LIMESTONE QUARRY IN WESTERN ILLINOIS, LOCATED ON GOOD GRAVEL ROAD, NEAR TO CEMENT ROAD AND RAILROAD. WE HAVE TWO JAW CRUSHERS AND TWO HAMMERMILLS, BUT NO POWER EQUIPMENT.
WENZLEMANN MFG. CO. GALESBURG, ILL.

WANTED

1 ¾ yard to 2¼ yard, 3 Motor or a 1 motor drive electric shovel, Marion or a Bucyrus. In A1 condition. Up to 4 months delivery.

Address replies to Box 307
PIT AND QUARRY PUBLICATIONS
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WANTED

Bottom Dump Ore Cars, about 25 cubic yards capacity, with 50-ton trucks and cross hoppers, same as used on Iron Range in Minnesota.

Malvern Gravel Company
Malvern, Arkansas

WANTED

2—two compartment tube mill approximately 7' x 26'.
1—Rotary kiln approximately 8' x 300' or 2 kilns 8' x 150' for delivery to West Coast.

Box 305, Pit and Quarry Publications
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WANTED

Bulldozer for Sixty Cat.

COLLINSON BROTHERS
Moline, Illinois

WANTED
ASPHALT PLANT

2 Ton or 1 Ton Cap. Advise Where Can Inspect.

THE DARIEN CORPORATION
DARIEN CONN.

WANTED

6—50-KVA and 3 75-KVA 7200 primary, 480 secondary, 25 cycle Transformers.

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Columbia Quarry Company
1612 Syndicate Trust Bldg.
St. Louis, Mo.

WANTED

BLOCK MACHINERY FOR SMALL PLANT. STATE AGE, PRICE AND CONDITION.

P. O. BOX 702
PETERSBURG, VA.

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. Lee Heidenreich, Jr.
Consulting Engineer
Route No. 1, Newburgh, N. Y.
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Operation
Plant Layout
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Appraisals

WANTED

1 yd. or 1½ yd. gas or diesel
CRANES, DRAGLINES & SHOVELS

Hawkins & Company
124 So. Michigan Ave. Chicago, Ill.

WANTED TO BUY

8" Hydraulic Dredging Outfit with Agitator, Diesel Power.
Write — Wire — Phone

EAST LANSING GRAVEL COMPANY
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Midwest quarry. Permanent job. Good advancement possibilities. Give experience, education, positions held, birth date, marital status, salary expected.

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An Assistant Chemist

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Wanted Plant Superintendent

Familiar with pipe, block or any special concrete product. Must have at least high school education, be mechanically inclined and have pleasing personality. Age limit 48. Postwar opportunity with large concern branching out into full line of products in various sections of the United States and operating on an incentive profit sharing plan. Past record must stand rigid inspection. Include photograph in reply.

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WANTED
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By leading producer crushed limestone located middle west. Product serves the chemical, metallurgical and construction industries. Excellent post war prospects.

Applicant must have broad experience and training in production and be capable of the direct supervision of all operations including maintenance of an organization for plant producing in excess of million tons annually.

Give complete history in first letter: age, education, family, experience by years, when available, references. References will not be contacted until after interview.

• • •

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ECONOMY BRINGS YOU *Wider selection...therefore* BETTER BUYS

Special offerings attractively priced in desirable shovels, cranes, and draglines. It will pay you to go over these listings carefully. Power—Gas—Diesel—Steam or Electric.

1—⅜ yd. Bay City Shovel Crane Combination. Michigan. $2390.00.

1—⅜ yd. Bucyrus-Erie 10B shovel dragline combination. Rebuilt. Guaranteed. Pennsylvania. $6050.00.

1—⅜ yd. Bay City "Pup" Shovel. New England. $2650.00.

1—⅜ yd. Byers, 35' crane boom, skimmer bucket, gas. Texas. $2800.00.

1—⅜ yd. Bay City backhoe, shovel. New York. $5100.00.

1—⅜ yd. Fundum Shovel. Rebuilt. Pennsylvania. $2650.00.

1—⅜ yd. Wilford Shovel and Crane Combination. Brand new. Owen ⅜ yd. clamshell bucket. California. $3600.00.

1—½ yd. Bay City "Pup" ¾ swing—backhoe and shovel. Pennsylvania. $3450.00.

1—½ Bay City Model 20, 6-cylinder Hercules. Good condition. Massachusetts. $5300.00.

1—½ yd. Bay City Model K shovel and crane. Rhode Island. $3700.00.

1—1942 diesel Linkbelt Speeder ¾ yd. dragline with 1 yd. dragline bucket.

1—Byers ⅝ yd. ¾ swing—25' crane boom, backhoe, skimmer scoop. Massachusetts. $2150.00.

1—⅝ yd. Byers Model BB backhoe and shovel—excellent condition. Streamlined cab. $6800.00.

1—⅝ yd. Byers Bearcat backhoe, skimmer bucket. New England. $1550.00.

1—½ yd. Bucyrus 10/20 shovel, crane combination. Rebuilt. Guaranteed. New England. $7100.00.

1—⅝ yd. General shovel. Colorado. $3550.00.

1—½ yd. General Shovel Crane. Up-State New York. $4100.00.

1—½ yd. Diesel General Crane, 35' boom. Pennsylvania. $7300.00.

1—½ yd. General shovel and dragline combination, 35' boom, ½ yd. drag bucket, Buda gas. Indiana. $4900.00.

1—½ yd. Hanson shovel and crane combination. New York. $3900.00.

1—½ yd. Insley full swing Model "R," 30' boom, Buda gas. Excellent condition. Wisconsin. $4100.00.

1—½ yd. Insley backhoe shovel, Buda gas. Pennsylvania. $3200.00.

1—½ yd. Insley Excavator, 28' boom, bucket, 4-cylinder Buda. Arkansas. $3100.00.

1—½ yd. Koehring Shovel. Wisconsin. $4200.

1—½ yd. Speeder B1 dragline, 30' boom, fairleads, ½ yd. dragline bucket, Hercules gas engine. Illinois. $5100.00.

1—½ yd. Speeder Shovel. Michigan. $4900.00.

1—½ yd. Linkbelt Speeder Shovel, good condition. Kansas. $4300.00.

1—⅝ yd. B3 Speeder Shovel. North Dakota. $5300.00.

SPECIAL
Late Model P&H 150, ½ yd. dragline and shovel combination, rebuilt and guaranteed, serial No. 5110.

1—½ yd. Thew Lorain. New England. $3150.00.

1—½ yd. Northwest Model 2 shovel dragline combination. New York. $6400.00.

1—Northwest Model 18 shovel, backhoe, crane, 35' boom, trailer. Price on request. New York.

1—Ohio ½ yd. shovel crane combination. Rebuilt. Guaranteed. Texas. $8900.00.

1—⅝ yd. P&H Model 200 Shovel. New Jersey. $2550.00.

1—⅝ yd. P&H 300A dragline. Louisiana. Price on request.

1—½ yd. Universal, 36' crane boom. Kentucky. $4200.00.

1—½ yd. Unit backhoe and crane combination. Fordson gas engine. Wisconsin. $4900.00.

1—¾ yd. 1939 Bucyrus-Erie 20B shovel and backhoe combination. Rebuilt. New York City. Price on request.

1—¾ yd. Bucyrus-Erie Model 20B diesel, older model, still in good condition. Alabama. $5200.

1—¾ yd. Byers "Bulldog" Type backhoe and shovel combination—New England. $5400.00.

1—1940 Lorain Model 40—¾ yd. backhoe, crane and shovel combination, dragline attachments, ¾ yd. Page dragline bucket, Owen clamshell bucket. Rebuilt. Guaranteed. New England. $12,650.00.

1—1939 ¾ yd. Marion backhoe, gas powered, Model 331. Rebuilt. Guaranteed. Up-State New York. Price on request.

1—¾ yd. Lorain Model L-45 shovel dragline combination. Alabama. $6700.00.

1—¾ yd. Marion shovel and crane combination. Rebuilt. Guaranteed, 1939. New England. $11,900.00.

1—¾ yd. Marion dragline. Rebuilt. Hercules 4-cylinder diesel engine. Arizona. $4950.00.

1—¾ yd. Marion, 1940, shovel backhoe, crane-dragline, Model 331. Rebuilt. Price on request.

1—¾ yd. Koehring Model 301 crane and shovel combination, boom 45'. Up-State New York. Price on request.

1—¾ yd. Bucyrus-Erie 20B electric tunnel shovel. New York City. $5150.00.

1—¾ yd. Koehring crane, 75' crane boom. Pennsylvania. $4900.00.

1—¾ yd. P&H 204 dragline crane combination, 4-cylinder Waukesha motor model ER, 35' boom, fairlead attachments. Oklahoma. $4900.00.

REAL BUYS

1—Rebuilt and guaranteed Northwest Model 25/8 yd. shovel and dragline combination. $5900.00.

1—Insley ½ yd. Model R 30' crane boom — excellent condition — ½ yd. bucket. Wisconsin. $3900.00.

1—1940 Model 25 Bay City ¾ yd. shovel and backhoe combination. $7700.00.

1—Late 1939 Byers Model 83 shovel—excellent condition. New Jersey. $8250.00.

1—¾ yd. Northwest Model 3 shovel. Connecticut. $6100.00.

1—¾ yd. Lorain 45 shovel crane combination, 40' boom. Rebuilt. Up-State New York. $8800.00.

1—¾ yd. Lorain 40 shovel, 4-cylinder Waukesha gas engine. Up-State New York. $8500.00.

1—¾ yd. Northwest Model 105, 4-cylinder Climax gas engine, boom 24'. Connecticut. $4850.00.

1—¾ yd. P&H 206, 40' dragline boom, 1 yd. Page automatic dragline bucket, 4-cylinder 85 H.P. gas engine. Indiana. $2900.00.

1—¾ yd. Byers Bearcat crane, ¾ swing, 30' boom. Hercules 6-cylinder motor. Connecticut. $4100.00.

1—¾ yd. Osgood shovel crane combination, 40' boom. Michigan. $6600.00.

1—¾ yd. Speeder Linkbelt crane, gooseneck boom. New York. $3850.00.

1—¾ yd. P&H Model 400 Shovel. South Carolina. $4250.00

1—¾ yd. Model "C" Koehring dragline, 40' boom. Florida. $4700.00.

1—¾ yd. Bay City T6B Excavator, backhoe, two skimmer buckets, ¾ swing. Pennsylvania. $2100.00.

1—¾ yd. Northwest Model 3 shovel. Utah. Price on request.

1—¾ yd. P&H 400, 30' crane boom, fairleads. Michigan. $4700.00.

1—¾ yd. Byers dragline, ¾ swing, 32' boom, 4-cylinder Buda engine. South Carolina. $2150.00.

1—¾ yd. Bucyrus-Erie ¾ yd. diesel crawler crane, 40' boom. Pennsylvania. $6400.00.

1—¾ yd. Byers Bearcat Shovel, Model OX, Hercules gas engine, 22' boom. ¾ clam bucket. New Jersey. $1850.00.

1—¾ yd. Bucyrus-Erie 20B Shovel, 3-cylinder Atlas Diesel Engine. Alabama. Price on request.

1—¾ yd. P&H Model 206 crawler crane, 35' boom. Waukesha gas engine. North Carolina. $3350.00.

1—1939 diesel/shovel and crane combination. Caterpillar D8800 diesel engine. Browning combination — 1 yd. shovel bucket, 50' crane boom, ¾ yd. backhoe and ¾ yd. clamshell bucket. Rebuilt and guaranteed.

1 YARD

1—1 yd. Koehring, 35' crane boom, Model 301, Colorado. $4100.00.

1—1 yd. Koehring Model 301 shovel and crane combination, 45' boom. Up-State New York. $5900.00.

1—1 yd. Lorain 60A shovel. Rebuilt. Aransas. $9400.00.

1—1 yd. Marion Model 340, 4-cylinder Buda gas engine. Good condition. Pennsylavnia. $8900.00.

1—1 yd. Northwest Model 4 shovel and dragline combination, 60' boom, excellent condition. Rhode Island. $9200.00.

1—1 yd. Northwest shovel and crane combination Model 105, 4-cylinder Wisconsin engine, 40' clam boom. Oklahoma. $4950.00.

1—1 yd. Bay City Model "R," 40' boom, good condition. Louisiana. $6600.00.

1—1 yd. Electric Browning Crane, 56' boom. Ohio. $6900.00.

1—1 yd. Diesel Bucyrus-Erie Model D2, 40' dragline boom. Guaranteed. New York City. $8400.00.

1—1 yd. Bucyrus-Erie GA2 shovel. New Jersey. $4400.00.

1—1 yd. Byers Shovel and Crane combination, 40' boom. Pennsylvania. $6900.00.

1—1 yd. Keystone Excavator with backhoe. Maryland. $2900.00.

6—11 YARD

6—11 yd. dragline, Bucyrus-Erie Monighan, Model 6150, 160' boom, 7 buckets.

1—1 yd. Koehring 401 shovel and crane combination, 55' boom, clamshell bucket. New England. $7300.00.

1—1 yd. Linkbelt K-30, 65' boom, fairleads and clamshell. Rebuilt. Guaranteed. Price on request.

1—1 yd. Lorain 60A, rebuilt top to bottom, Shovel. Colorado. $8900.00.

1—1 yd. Marion Type 440 shovel, dragline combination. Texas. $4300.00.

1—1 yd. P&H 600, 50' boom. Rebuilt. Indiana. $5900.00.

1—1 yd. Northwest, 40' boom. Oklahoma. $6600.00.

1—1 yd. Northwest Model 104. Illinois. $3800.00.

Northwest Model 5.
1—1¼ yd. shovel entirely rebuilt. $8700.

1—1 yd. Northwest Model 105, 55' boom. New Jersey. $4700.00.

1—1 yd. Northwest 105. Rebuilt. Florida. $4900.00.

1—1 yd. P&H 600, 40' boom, clamshell bucket, generator set and 48' magnet. Colorado. Price on request.

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1¼ YARD

1—1¼ yd. Linkbelt Model K2, 45' boom. Waukesha gas engine. Up-State New York. $4200.00.
1—1¼ yd. Lorain 75B Crane, 75' boom, clamshell bucket. Connecticut. $10,450.00.
1—1¼ yd. Lorain 75A shovel, 4 cylinder Waukesha motor. Kentucky. $9750.00.
1—1¼ yd. Lorain 75 Crane, 50' boom. Waukesha gas engine 105 H.P. Oklahoma. $10,300.00.
1—Lorain 75B 1¼ yd. Shovel. 4 cylinder Waukesha gas engine, good condition. Texas. $12,900.00.
1—1¼ yd. Diesel Marion Model 450 Shovel, 4-cylinder Cummins Diesel Engine. Exceptionally good condition. Pennsylvania. $14,200.00.
1—1¼ yd. Diesel Marion Model 450, Buda Diesel Engine, dipper bucket. Oregon. $13,900.00.
1—1¼ yd. Marion gas electric shovel Model 450, 70' boom, 6-cylinder Buda motor. Oregon. $8300.00.
1—1¼ yd. Northwest No. 3 dragline, 50' boom and Page dragline buckets. Florida. $9800.00.
1—1¼ yd. Northwest Model 104 shovel and crane combination. New Jersey. $700.00.
1—1¼ yd. Northwest Model 104 shovel, crane and backhoe combination, 70' crane boom, backhoe attachment. Rebuilt. Illinois. $8750.00.

LEASE OR SALE

75-B Lorain 1½ yd. crane with shovel attachments, 70' boom, streamline cab, rebuilt condition.

1—1¼ yd. Northwest shovel and crane combination, Model 104. New Jersey. $6700.00.
1—1¼ yd. Osgood shovel. Texas. $7100.00.
1—1¼ yd. Osgood shovel dragline combination. Good condition. Wisconsin. $8200.00.
1—1¼ yd. Osgood shovel. Missouri. $5800.00.
1—1¼ yd. P&H 700 shovel, Waukesha gas engine, 55' dragline boom. New Jersey. $8950.00.
1—1¼ yd. P&H Model 600A crane and dragline combination, 65' boom. Missouri. $6900.00.
1—1¼ yd. Diesel Shovel P&H Model 650, Atlas Imperial Diesel Engine. West Coast. $9700.00.
1—1¼ yd. Bucyrus-Erie Gas Air Shovel. Alabama. $3450.00.
1—1¼ yd. Byers Master Shovel. New York. $6300.00.
1—1¼ yd. Koehring Model 376. Rebuilt. Excellent condition. Alabama. $9800.00.
1—1¼ yd. Lima Shovel. New England. $8750.00.
1—1¼ yd. Lorain 75. Rebuilt. Guaranteed. New York. $10,400.00.
1—1¼ yd. Marion Model 450, 55' boom. Rebuilt. Up-State New York. $12,900.00.
1—1¼ yd. Orton, 70' boom. North Carolina. Price on request.

1½ YARD

1—1½ yd. Linkbelt Model K42 Crane, 60' boom. New Jersey. $7900.00.
1—1½ yd. Bucyrus-Erie 37B shovel and dragline combination. Good condition. Michigan. $17,900.00.
1—1½ yd. Diesel Koehring Model 502 Shovel, 6-cylinder Caterpillar Diesel Engine. Colorado. $14,500.00.
1—1½ yd. Osgood, Caterpillar 6 cylinder 75 H. P. Motor. Good condition. Texas. $7100.00.
1—1½ yd. P&H Model 650 dragline and crane. Rebuilt. South Dakota. $14,600.00.
1—1½ yd. Lorain 75B, 75' crane boom, dipper bucket and clamshell bucket. Rebuilt. Guaranteed. New York City. $11,900.00.
1—1½ yd. P&H Model 700 shovel and crane combination, 65' boom. Michigan. $6600.00.
1—1½ yd. Lorain 75, 1½ yd. dragline bucket. Rebuilt. Montana. $13,500.00.
1—1½ yd. Osgood. Texas. $7100.00.
1—1½ yd. P&H Model 700 B, 65' dragline boom. Ohio. $9300.00.
1—1½ yd. P&H Model 700 Shovel, 65' boom. Michigan. $6600.00.

A FEW SPECIALS

1—1½ yd. Lorain 75B — rebuilt condition with crane boom and shovel.
1—1½ yd. 1940 diesel Bucyrus-Erie 37B shovel.
1—1¾ yd. Northwest Model 7, 65' dragline boom—can be purchased reasonable—it is a real buy.
1—1¾ yd. Bucyrus-Erie 43-B diesel shovel and dragline combination.
1—1938 Lorain 30 shovel, backhoe and crane with bucket, rebuilt and guaranteed. $8200.00.
1—⅜ to ½ yd. Bay City 1937 Model 20 backhoe and shovel.

1¾ AND 2 YARDS

1—2 yd. Diesel Bucyrus-Erie 43B shovel, crane and dragline combination. 6-cylinder Waukesha gas and GMC Diesel Engines. Pennsylvania. Including $2500.00 new parts; price $18,900.00.
1—1¾ yd. Bucyrus-Erie 42B electric tunnel shovel. Virginia. $11,000.00.
1—2 yd. Bucyrus-Erie 50B Diesel Shovel. Rebuilt. Guaranteed. Ohio. $23,400.00.
1—2 yd. Marion electric shovel Model 37. Very good condition. West Coast. $18,400.00.
1—1¾ yd. P&H 705, 60' dragline boom. Condition good. Missouri. $17,250.00.
1—2 yd. dragline, 80' boom, Brownhoist make. Rebuilt. Excellent condition. New York. $18,900.00.
1—2 yd. Diesel Bucyrus-Erie 43B Shovel. Rebuilt. Guaranteed. Maryland. Price on request.
1—2 yd. Diesel 50B Bucyrus-Erie Crane. West Coast. $16,500.00.
1—1¾ yd. Northwest Dragline, Model 7, 80' boom. Rebuilt. Guaranteed. Louisiana. $17,800.00.
1—1¾ yd. Northwest dragline, 65' boom. Rebuilt. New York. $18,500.00.
1—1¾ yd. Northwest Model 7 dragline—65' boom—good condition. Real bargain. Texas. $11,900.00.

3 YARDS TO 20 YARDS

1—3 yd. Monighan Dragline, 76' boom, Westinghouse electric. Rebuilt. Illinois. Price on request.
1—3 yd. Diesel P&H Dragline, 110' boom. Rebuilt. Pennsylvania. $52,000.00.
1—3 yd. Page Diesel dragline, 90' boom. Needs repairs. Illinois. $15,600.00.
1—3½ yd. Diesel Monighan 3W, converted from 3T, 80' boom. West Coast. $19,800.00.
1—3½ yd. Marion Model 490 electric shovel. Spare parts. Excellent condition. Price on request.
1—4 yd. Bucyrus 120B electric shovel. Minnesota. Price on request.
1—4 yd. Marion electric shovel. Rebuilt. Guaranteed. Price on request.
1—4 yd. Marion 125 electric shovel. Very good condition. Minnesota. $31,500.00.
1—4 yd. Bucyrus Monighan Diesel dragline, 70' boom. West Coast. Price on request.
1—6 yd. Marion electric dragline, 80' boom. West Coast. Price on request.

STEAM SHOVELS — CRANES

6—¾ yd. Steam Shovels—Marion and Bucyrus-Erie.
3—1 yd. Steam Shovels—Marion, Bucyrus-Erie, Massilion, Osgood.
1—1¼ yd. Marion Model 480 Steam Shovel.
4—1½ yd. Marion, Bucyrus-Erie Steam Shovels.
1—2 yd. 50B Bucyrus-Erie Steam Shovels.
1—2 yd. Bucyrus 14 Steam Dragline.
1—3 yd. Bucyrus 80B Steam Shovel, 46' boom, 26' dipper stick.
1—4½ yd. Bucyrus-Erie Steam Shovel.
1—5 yd. Marion Steam Shovel.
1—8 yd. Marion Dragline, 165' boom.

TRUCK CRANES

1—Michigan ½ yd. 10-wheeler Shovel and Crane. Rebuilt. New York. Price on request.
1—P&H 12-ton Model 300, 10-wheeler. New Jersey. $8800.00.
1—Lorain 40, 15-ton, 10-wheeler, 70' boom. New York. $11,400.00.
4—Universal and 3 P&H Truck Cranes. Write for details.
1—1939 Quickway on 6 wheeler truck, new tires 1000x24.
1—18 ton Byers 10 wheeler truck crane—rebuilt and guaranteed.
1—Universal 10 wheeler—rebuilt condition. $5200.00.

TRACTORS

2—RD8 Factory-rebuilt tractors, bulldozer, 13 yd. scrapers, winch, excellent condition.
1—RD7 Tractor with Garwood Hydraulic Bulldozer.
1—RD4 Tractor, brand new, LaPlant-Choate Bulldozer.
1—D7 tractor, front power unit, LeTourneau bulldozer, generating set—rebuilt and guaranteed. $5700.00.
1—D7 late model tractor with 6 yd. LeTourneau scraper, 6 large tires excellent condition. Price low.
A great many other Caterpillar, Allis-Chalmers and International Tractor listings on request.

DUMP TRUCKS

12—Euclid 18 yd. Bottom Dump Trucks, built in 1941 or 1942. Ref. 201.
9—Euclid End Dump Trucks, built in 1941 or 1942. Capacity 12 cu. yd. Ref. 202.
3—20 cu. yd. Six-Wheel Maxi Model Two-Way Side Dump Trucks. Ref. 203.
15—Federal Trucks, built 1942, 17 ton carrying capacity. Ref. 204.

SPECIAL

3—1940 diesel Euclid dump trucks of 10 yds. capacity, powered by a Cummins Model H diesel engine at a bargain price. Wire for details.

Complete listing on each of these items will be forwarded promptly on request.

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14—Linn Model DA10 Boulder Dam Type Rear Dump Body HAFTRAKS.
11 equipped with Cummings Diesels.
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Units purchased new in 1942.

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6—complete Power Plants, purchased from Georgia Power Company, including:
22—High Pressure Water Tube Boilers, 200 to 600 H. P.
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2—Blaw Knox Batchers No. 300.
1—Blaw Knox Batcher No. 400.
1—Blaw Knox Batcher No. 401.
2—Blaw Knox Batcher Cement weighing machines, Fairbanks Scales.
16—Steubner Split Leaf Dump Bottom Concrete Buckets.
4—Steubner Double Leaf Concrete Buckets.
12—Steubner Single Leaf Bottom Concrete Buckets.
1—Clam Shell Bucket 1 cubic yard.
1—Smith No. 56-S 2 cu. yd. tilting concrete Mixer, complete with Batch Hopper on steel frame No. 47791.
2—Standard Gauge Wood Frame Flat Cars —8 wheels, 50,000 lbs. capacity, 34' long.
5—Ditto, except 60,000 lbs. capacity, 40' long.
1—Steel Draft Sill — Flat Car — Standard Gauge 60,000 lbs. capacity, 40' long.
6—Western Wheeled Scraper Co. 10 yard dump cars, Standard Gauge — Steel Frame Wood Body — 4 wheels.
4—Wooden body steel frame Double Truck Standard Gauge Dump Cars — 14 cubic yard capacity.
2—Easton 40 cubic feet, 30" gauge, 2 bottom rocker dump cars.
1—Symons No. 547, 5½' Cone Rock Crusher.
1—Traylor Type FB-4 47" x 84" Vibrator, No. 0403 with MG set.
1—Worthington Pump & Mchry. Corp. 60" x 14' Revolving Rock Screen No. 4212.
1—Dodge No. 3 42" Belt Conveyor mechanism without belt.
1—Dodge No. 2 30" Belt Conveyor mechanism without belt.
1—Caldwell No. 1 Screw Conveyor 9" x 54' long.
1—Caldwell No. 3 Screw Conveyor 9" x 54' long.
1—Caldwell Elevator Bucket Conveyor Buckets 8" x 5" 63' Centers.
3—Waugh Turbo Model 34 rock drill No. 1031.
1—Waugh No. 192 DS-8 Air Drive Drill Sharpener.
1—Ingersoll Rand Type 26 No. 985 Oil Furnace for heating drill steel—less tank.
1—Lidgerwood 2 drum Hoist. Drums 14" x 26" with 30 HP, 3 phase 60 cycle, 220 volts GE motor—less rotor.
1—Lidgerwood 2 drum Hoist. Drums 14" x 26" with 30 HP, 3 phase 60 cycle 220 volts GE Motor.
1—Lidgerwood 2 drum Hoist No. 528. Drums 14" x 26" with 30 HP, 3 phase, 60 cycle 220 volts GE Motor.
1—Lidgerwood 2 drum Hoist, No. 4277, Drums 14" x 26", less motor.
1—Lidgerwood 2 drum Hoist. No. 5495. Drums 16" x 30" with 80 HP 3 phase, 60 cycle, 220 volts, GE Motor and Magnetic Brake.
1—Lidgerwood 2 drum Hoist. No. 5501. Drums 16" x 30" with 80 HP 3 phase, 60 cycle 220 volts GE Motor and Magnetic Brake.
2—Lidgerwood Swinging Hoist type S-2 No. 4884 with 7½ HP, 3 phase, 60 cycle 220 volts GE Hoist Motor.
2—Lidgerwood Swinging Hoist No. 5510 and 5511. Drums 16" x 26" with 15 HP, 3 phase, 60 cycle, 220 volts, GE Hoist Motor.
1—American Hoist & Derrick Co. 20-ton derrick—115' mast, 1 100' boom less bull wheel.
1—American Hoist & Derrick Co. 20-ton derrick, 115' mast, 100' boom.
3—American Hoist & Derrick Co. 20-ton derrick, 115' mast, 100' boom.
3—American Locomotive 20-ton, size 11x16 4-wheel Saddle Tank, Standard Gauge Wheel Base 57", Nos. 65374, 65432 and 65376.
1—Baldwin 26-ton locomotive 13 x 20 wheel base 72" No. 37571.
1—Brooks Locomotive 60 tons, size 18x24, 6 wheels with Tender Standard Gauge, 132" wheel base.
1—5 HP GE Induction Motor, 220 volt, 3 phase, 60 cycle, 1150 RPM No. 3855802, less starter.
1—30 HP GE Squirrel Cage Induction Motor, Type KT, 2200 volt, 900 RPM, 3 phase, 60 cycle, No. 388661 with Wemco Auto Starter.
1—30 HP Wemco type, CS Induction Motor, 220 volt, 860 RPM, 3 phase, 60 cycle, No. 418723.
1—30 HP Wemco Type CS Induction Motor, 2200 volts, 860 RPM, 3 phase, 60 cycle No. 4184724 with Auto Starter, No. 402728.
1—40 HP Wemco Type CW Slip Ring Motor, 2200 volts, 3 phase, 60 cycle, 690 RPM, No. 4184732, with Controller No. 116798.

All equipment offered on an "as is where is" basis, also subject to prior sale, withdrawal for use or otherwise, and subject to all Governmental Regulations now in effect, or subsequently issued, affecting the sale thereof.

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BOX 1200—1474 BROADWAY, N. Y. C.

LIQUIDATING SOLVAY PROCESS LIMESTONE PLANT

Must Be Moved by April 20, 1945

250 Buggies
(standard gauge)
IMMEDIATE DELIVERY

Overall width 63". Overall length 10' 10½". Wheels, roller bearing, 20" diameter. Axle 2¾". End width 51¼". Height 7' 1". Frame 5" channel, 2" flange. Wheelbase 63", 68", 69". Sides can be raised or lowered to suit need.

3—42" Fuller Lehigh Mills with horizontal motors and Tex Rope Drives.
1—46" Fuller Lehigh Mill with Tex Rope Drive.
1—114' Link-Belt Bucket Elevator, 13" x 7" x 10" Buckets.
1—Rudles Cole Rotary Dryer—6' x 50'
1—Rudles Cole Rotary Dryer—5' x 50'

For detailed information address all inquiries to

ANTRIM WRECKING & SALVAGE COMPANY
405 Murphy Building
7 East Grand Avenue
Highland Park 3, Michigan

CRUSHERS

12 x 24 Webb City Jaw Crusher
No. 4 Gruendler Peerless Screenings Grinder
No. 13 American Ring Pulverizer
No. 2 Williams Little Giant Hammermill
No. 2 Gruendler Jaw Crusher
Size 24 Symons Disc Crusher

STURTEVANT BLOWERS

50" Slow Speed Mill Exhauster
70" Sawmill Fan
36" Fan

BEDFORD PLANERS

37" Planers—13' and 15' Beds

NEW MATERIALS

Bolts, screws, rivets, pipe.
Write for list.

INLAND EQUIPMENT CO.
P. O. Box 477 Nashville, Tennessee

Construction Plant and Equipment From Shasta Dam, California

Available For Sale **Immediate Delivery**

Listed below are a few of the items of plant and equipment used in the construction of this dam. Most of the equipment purchased new for this project. Most items available for immediate shipment, F.O.B. Shasta Dam, California, subject to prior sale.

CABLEWAYS AND HOISTS

3—Lidgerwood, 3-drum electric hoists with 500 H.P. G.E. Motors. Ward Leonard control, complete with controls and all electric equipment.

3—Lidgerwood, 3-drum electric hoists with 500 H.P. Westinghouse motors complete with controls and all electrical apparatus.

5—Cableway towers, structural steel, 3—125 ft.; 1—75 ft. and 1—45 ft., complete with travel mechanism.

6—Complete sets of carriages, main and auxiliary, fall and dump blocks, fall rope carriers, buttons, takeup bars and takeup sheaves.

2—15 H.P. Sprague single drum electric hoists. Complete with controls and brakes. Cap. 10 T.

1—American pillar crane. Cap. 5 T. at 48½ ft. and 15 T. at 25 ft. radius.

1—Lidgerwood car pulling winch, 24 H.P.

1—Colby elevator hoist, double drum, 75 H.P., equipped with brakes and emergency equipment including one hoist cage.

1—1790 ft. pcs. of 3" dia. locked coil cable, new.

12,000 lin. ft. of used 3" dia. locked coil cable in length from 500 to 2600 lin. ft.

50,000 lin. ft. of used ⅞" and 1⅛" wire rope.

20,000 lin. ft. of new ⅞" and 1⅛" wire rope.

Misc. lot of sheaves, jewels, blocks, etc.

CEMENT PLANT

1—Dual #265 Fuller Fluxo cement pump, duplex type complete with gravity feed and automatic control equipment. 400 bbls. per hr. capacity. Pumping distance 3300 ft.

2—Fuller-Kinyon Pumps—type "D" 125 h.p. complete with air hose power control cable, control cabinets.

1—C-200 Fuller single stage rotary compressor Westinghouse motor 100 h.p.

CONVEYORS

1,000 troughing rolls for 36" belt.

300 return idlers for 36" belt.

2—Complete sets, including 42" tandem drive pulleys, 42" head pulleys, 36" tail pulleys.

3—150 h.p. Westinghouse gear motors, 144 r.p.m., 2300 volts, 3-phase, 60 cycle.

1—75 h.p. Westinghouse gear motor, 194 r.p.m., 2300 volt, 60-cycle.

1—Complete conveyor assembly, including 36" belt, rolls, drives, pulleys and takeup, 240 ft. center to center head and tail pulley.

1—Telepoise conveyor scale for 36" belt.

1—Airplane tripper for 36" belt with two 17' wing belts, capacity 1,000 T per hour, complete with pulleys, drives and gear motors.

2—120B Bucyrus-Erie shovel and dragline combinations, electric power.

16—White dump trucks model 1580-691, 24 cu. yd. capacity.

DRILLING EQUIPMENT

5—1-R paving breakers.

10—1-R drifters DA35.

5—1-R Wagondrills—pneu. tires, hoists, X71 drifters mounted.

1—1-R-54 Drill Sharpener.

10—1-R Jackhammers.

TANKS & RECEIVERS

1—9500 bbl. all welded water tank, 48' dia., 30' high.

2—5400 bbl. all welded water tanks, 36' dia., 30' high.

1—200 bbl. steel water tank.

10—Sandblast tanks 24" x 96" with hoppers and fittings.

10—Lubricator tanks 14" x 30"; 24" x 48"; and 24" x 60".

4—Air receivers, 48" x 12'.

PUMPS

2—Byron-Jackson 400 h.p. 12 in. deepwell.

3—Bingham type SVD submersible pumps.

1—Bingham 100 h.p. 18 in. deepwell.

1—Byron-Jackson 150 h.p. 10 in. deepwell.

1—Gardner-Denver grout pump model FD-FS, 10" x 2½" x 10", with case-hardened liners and Calmex pistons and rods, 1,000 lb. pressure at 90 lb. air.

Other pumps complete with motors from 1½ h.p. to 200 h.p., also several 1-R #25 sump pumps.

MIXING PLANTS

1—3000 cy. bin with 5 compartments for aggregates, 2 compartments cement, incl. turnhead, gates.

1—Complete set C. S. Johnson fully automatic batching equipment for 5 aggregates, cement and water for 4 cy. batchers.

5—4 cy. Koehring Concentric zone mixers, incl. batchmeters, timers, consistency meters.

1—100-ton steel bin.

MISCELLANEOUS

4 ea. # 6671 Mattison mine cars, body size 29" x 47" x 32".

1—Special built sheepsfoot roller with floating frames, extra heavy duty.

1—Bodinson 60" x 16' trommel screen complete with motor drive, feed chutes.

Pipes—used, 3, 4, 6, 8, 10, 12, 16-inch.

Valves—1, 2, 3, 4, 6, 8, 10, 12, 16-inch.

10,000 ft. Type S rubber covered cord cable.

Pole line hardware.

Floodlites—500 to 1500 w.

Structural Steel—all shapes and sizes—girders 48 and 72 inch—28 to 50 ft.

1—LeTourneau Heavy Duty 3-Point Rooter.

1—1¼ cu. yd. Heavy Duty Clamshell Bucket.

12—Muck Skips, 7—14 cu. yds.

50—Chicago Pneumatic concrete vibrators, Nos. 417, 518 and 519.

MACHINERY AND SUPPLIES

2—125 KW. motor generator sets, 275 volts DC.

1—Robins contractors screen, size 16"x36".

1—Sand drier, 24" dia. x 10' long, with motor, speed reducer, feed & discharge chutes, oil burner & stacks.

5—Blowers; American, Buffalo & Coppus types.

50,000 bolts ⅝" x 36", threaded one end with square head.

100 T. ½", ⅝", and 1" mild steel rods.

Complete stock of Warehouse supplies.

Complete stock of Mess hall and Dormitory equipment and furnishings.

Complete line of transformers and electric motors.

Commitments for future delivery will be accepted on any of the above items not immediately available.

PACIFIC CONSTRUCTORS, INC.

GENERAL CONTRACTORS — SHASTA DAM, CALIFORNIA **PHONE 512 REDDING**

FREIGHT CAR PRICES REDUCED!

Now only half of recent peak prices — $500 to $4250 each!

Which of these cars could YOU use?

8—Hopper, Twin, 50-Ton
40—Hopper, Triple, 50-Ton
50—Hopper, Side-Discharge, 50-Ton
80—Refrigerator, 40-Ft., 40-Ton
16—Refrigerator, 36-Ft., 30-Ton
50—Box, 40-Ft., 40-Ton
10—Dump, Magor, Automatic, 30-Yd., 50-Ton; lift doors
9—Dump, Western, Automatic 30-Yd., 50-Ton; lift doors
4—Dump, Western, 20-Yd., 40 and 50-Ton; steel floors
1—Dump, Koppel, Drop-Door, 20-Yd., 40-Ton
25—Dump, Koppel, 20-Yd., 40-Ton; Lift Doors
20—Flat, 40-Ft., 40 and 50-Ton
70—Gondola All Steel, 40-Ft., 16 Drop doors
6—Gondola, 50-Ton., High-Side, Steel
10—Tank, 8000 Gallon, 40 and 50-Ton

Perhaps this list also has some other cars you could use to very beneficial advantage now? All cars are priced to sell!

IRON & STEEL PRODUCTS, INC.
40 years' experience
13490 S. Brainard Ave., Chicago 33, Illinois
"ANYTHING containing IRON or STEEL"

COMPRESSORS

1—2600 Ft. Sullivan, 60 cy. motor
1—1570 Ft. 100-lb. Worth., 60 cycle motor
1—1400 Ft. Sullivan, Belted
1—1051 Ft. Sullivan, 60 cy. motor
1—1051 Ft. Sullivan, Belted

DIESEL UNITS

1—450 HP M.A.N., 2300 V. 60 cy. gen.
1—440 HP Nordberg, 250 V. DC gen.
1—300 HP McInt. & Sey., 480 V. 60 cy. gen.
2—125 HP Winton, 240 V. 60 cy. gen.

Brew, Woltman & Company Inc.
50 Church St., New York 7, N. Y.

STONE CRUSHERS

Acme, Champion, Traylor.

SHOVEL

½-yd., gas, ¾ swing, Insley type C, 17′ boom, 12′6″ dipper stick.

Also skimmer attachment. Rebuilt—very low price.

• • •

THE INDUSTRIAL EQUIPMENT CORPORATION
P. O. Box 1647, Pittsburgh 30, Pa.
Warehouse: Carnegie, Pa.

FOR SALE

8 Side Dump Koppel Cars, 9′ x 6′6″ x 26″ Bodies. Cars recently placed in first-class operating condition.
Selling Price $200 per Car.

THE NEW ENGLAND LIME COMPANY
260 Columbia Street, Adams, Mass.

NOW AVAILABLE

1—1¼ yd. LORAIN gas shovel.
1—K-48 LINK-BELT Gas Dragline—100′ boom and 2½ yd. bucket.
1—1½ yd. OSGOOD gas shovel.
2—50-B BUCYRUS Steam Shovels.
1—½ yd. BYERS Bearcat crane on truck.
1—5-ton ERSTED Truck crane, pneumatic tired.
1—77 LORAIN Diesel Shovel & Crane.
1—60-A LORAIN Gas Shovel.
1—HAISS Bucket Loader.
2—BARBER-GREENE Bucket Loaders.
1—52 ton BALDWIN Steam Locomotive.
1—80 ton BALDWIN Steam Locomotive.
2—65 ton AMERICAN Steam Locomotives.
1—8 ton PLYMOUTH Gas Locomotive—36″ gauge.
1—3 ton BROOKVILLE Gas Locomotive—42″ and 36″ gauge.
1—46′ JEFFREY Bucket Elevator 5″ x 7″.
2—60′ LINK-BELT Bucket Elevators 12″—(enclosed type).
1—Model 250 HELTZEL Cement Bin, complete.
1—48″x8′ ALLIS-CHALMERS 3-deck Screen.
1—No. 34V PIONEER Portable Gravel Plant.
1—No. 22 PIONEER Portable Gravel Plant.
1—2′-4″ TRAYLOR Type TY Crusher.
1—12x26 CHAMPION Jaw Crusher.
1—9x16 DIAMOND Jaw Crusher.
1—7x16 UNIVERSAL Jaw Crusher.
1—24x36 FARRELL Jaw Crusher.
1—10x40 GOOD ROADS Jaw Crusher.
3—ASPHALT PLANTS—Portable and Stationary.
2—SAND & GRAVEL Plants—complete & operating—Ohio & Penna.

PATTERSON EQUIPMENT CO.
1468 West 9th St. Cleveland 13, Ohio
Cherry 0439

RAILS

LOCOMOTIVES

Steam & Gasoline
Standard & Narrow Gauge

CARS

HENRY LEVIS & COMPANY
Commercial Tr. Bldg., Philadelphia 2

Reliable Diesel Power Equipment for Immediate Shipment

1—1500 HP Nelseco, solid injection with AC Generator
1375 HP (2 units) McIntosh-Seymour with General Electric AC Generators, complete plant
1—750 HP National Superior (can be supplied with AC Generator)
4—400 HP DeLaVergnes with AC Generators
2—400 HP DeLaVergnes with DC Generators
2—300 HP Fairbanks-Morse with AC Generators
2—200 HP Atlas power units
2—130 HP Caterpillar D-13000 power units
2—130 HP (125 KVA) Caterpillar D-13000 AC Generator units
1—150 HP Buckeye with or without Generator
1—120 HP Fairbanks - Morse with AC Generator
5—80 HP International Harvester UD-18 AC Generator units
4—60 HP Fairbanks-Morse power units
1—55 HP Ingersoll Rand with belt flywheels

ADVISE YOUR DIESEL POWER REQUIREMENTS

A. G. SCHOONMAKER CO.
50 Church St. Phone Worth 2-0455
New York 7, N. Y.
Business Established 1898

CRUSHING PLANT

Pioneer semi-portable stone plant, with 24″ x 36″ roller bearing jaw crusher, 40″ x 10′ grizzly feeder, D13000 Caterpillar diesel power unit; 54 x 24 roller bearing roll crusher, 24″ x 100′ conveyor, 4′ x 12′ triple deck vibrating screen, 3 compartment steel bin, 30″ x 15′ conveyor, 18″ x 10′ return conveyor, D17000 Caterpillar diesel power unit, complete plant with drives, spouts, hoppers, etc. New in 1942. Excellent condition.

O. B. AVERY COMPANY
1325 Macklind Ave., St. Louis, Mo. (10)

2—Digger, Clay, Ingersoll-Rand, Size 73
1—Mine Sampler, Ingersoll-Rand, Size 275
1—Tamper, backfill, Cleveland P. Tool, Size 5A
1—Holder-on, Chicago Pneumatic, Model A, Size 1¼″
2—Holder-on, Ingersoll-Rand, Ser. 10675, Size 4
1—Holder-on, Ingersoll-Rand, Ser. 10739, Size 2
5—Hammer, rivet, Chicago Pneumatic, Model 90, Size 1¼″
2—Hammer, rivet, Chicago Pneumatic, Model 80X, Size 1⅜″
4—Hammer, holder-on. Chicago Pneumatic, Model 90 Boyer, Size 1¼″
7—Hammer, rivet, Chicago Pneumatic, Model 90
75—Used Steel-Brooks Load Lugger Buckets; 1½ yds. capacity, V shaped bottoms—rounded, with ring hooks.

CLINE & DOOCHIN
Yards: 1014 Third Avenue North
Nashville, Tennessee

LOCOMOTIVES

1—20 ton Plymouth standard gauge gasoline
1—20 ton Whitcomb diesel 36″ gauge
1—57 ton Baldwin type 0-6-0 standard gauge saddle tank
2—67 ton American type 0-6-0 standard gauge separate tenders
2—78 ton Baldwin type 0-6-0 standard gauge side tanks

B. M. WEISS COMPANY
Girard Trust Company Building
Philadelphia 2, Pennsylvania

FOR SALE—CHEAP

A well established industrial sand business, with an approximate 40 acres of sand, and equipment. This is a money making business for anybody willing to hustle. The reason for selling is I have been in this business for 40 years and my health is bad, and I am wanting to retire. Contact—

HUFF & SON SAND CO.
GADSDEN, ALABAMA P. O. BOX 266

Three gas crawler cranes for sale:

1 Speedcrane 17½ tons capacity 60′ boom, 1 yard shovel attachment.
½ yard General gas crawler 7 tons capacity.
½ yard Orton gas crawler, 45′ boom.

Box No. 401
c/o Pit and Quarry, 538 S. Clark Street
Chicago, Illinois

CLAMSHELL BUCKETS

1—5 yd. Kiesler bucket style N, digging or rehandling. NEW 1943. Wt. 11,-500 lbs.

1—3 yd. Blaw Knox digging bucket, No. 635. Wt. 11,500 lbs.

Also a large stock, ⅜ to 3 yd. cap.

ELECTRIC CRANE

1—18 Ton O & S type B Crane, mtd. on 8'0" ga. track, 50' boom. Power 52 HP 440/60/3 elect. Mtr.

In many cases it is poor economy to hold on to equipment that doesn't fit your present job in hopes that it might fit the next one. Better to SELL us what you don't use and RENT from us exactly what you need.

REVOLVER

1—Mdl. 685 American Revolver, ser. No 137, 100' boom, Steam powered, oil fired. Cap. 85' boom 55,-000 lbs. @ 25' radius.

PNEUMATIC TOOLS

30—Jackhammers, Ing. Rand, Gardner Denver, Sullivan Cleveland. . . . .

11—Drifters, Ing. Rand, Gardner Denver, Sullivan.

5—Derrick & Wagon drills, Ing. Rand & Gardner Denver. Will drill holes up to 30' depth.

AIR COMPRESSORS STATIONARY

1—1190 cu. ft. Ingersoll Rand 2 stage horizontal compressor, type XB2 without power.
1—941 cu. ft. Sullivan angle compound compressor, Class WJ4, power 150 HP AC electric motor.
1—420 cu. ft. Gardner Denver Model ABH 1005 power 100 HP AC electric motor.
1—418 cu. ft. Sullivan Class WJ3 angle compound 2 stage power 112 HP Cummings Diesel engine.
1—224 cu. ft. Sullivan 2 stage 4 cyl. compressor Class WL 60 without power.
1—50 cu. ft. Ingersoll Rand type 4D power 10 HP Allis Chalmers DC electric motor.

Portable — Two Stage

2—315 cu. ft. Ingersoll Rand power 4 cyl. Waukesha gasoline engines.
1—315 cu. ft. LeRoi Model F2P power 4 cyl. LeRoi gasoline engine.
1—315 cu. ft. Ing. Rand, No. 40-T-35, power, 95 HP, 4 cyl. Waukesha gasoline engine.
1—210 cu. ft. Ingersoll Rand power 4 cyl. 60 HP Waukesha gasoline engine.
1—210 cu. ft. Worthington power 75 HP Hercules gasoline engine.
1—210 cu. ft. Sullivan Class WK60 power 4 cyl. Buda gasoline engine.
6—160 cu. ft. Davey, Ingersoll Rand, LeRoi and Schramm gasoline powered engines.
5—105 cu. ft. Davey, Schramm, Worthington and Ingersoll Rand gasoline powered engines.

WE ALSO HAVE A LARGE STOCK OF PORTABLE SINGLE STAGE COMPRESSORS FROM 110-360 CU. FT. DISPL.

BINS

1—102 Ton Erie, 3 comp. all steel.
1—60 ton Butler, type V-40, 2 comp. all steel.
2—30 cu. yd. Seaverns, single comp. all steel.

CRUSHING PLANT

1—Good Roads crushing plant, size 1020, opening 10x20," cap. 10 to 20 tons hr. Also 32' bucket elevator. Mt. steel wheels. Also 30 ton cap. hopper with screen.

CRUSHERS

1—No. 2 Climax jaw crusher, size 9x16".
1—Buchanan jow crusher, size 10x16.
1—Acme jaw crusher, Ser. No. 1873, size 12x20".
1—Acme jaw crusher, Ser. No. 1686, size 9x16".
1—No. 3 Champion jaw crusher, size 7½x13".
1—United Iron Works, "Blake-type" jaw crusher, size 9½x24".
1—No. 9 New Holland jaw crusher, size 6x9".
1—Sawyer Massey jaw crusher, size 9x18".
1—Allis Chalmers No. 5 gyratory crusher, Ser. No. 5331, opening 10x38".
1—Austin No. 5 gyratory crusher, Ser. No. 2945, opening 12x35½".

CRANES AND SHOVELS

1—1¼ yd. Koehring, mdl. 501, ser. #1071, 70' boom.
1—1 yd. Erie gas Model GA2 Serial #10679, with 45' boom and shovel attachment.
1—1 yd. Marion, mdl. 440, ser. #5961, 50' boom.
1—1 yd. Northwest, mdl. 105, ser. #1698, 50' boom.
1—1 yd. Model 600 P & H, Serial #3502, 40' boom & backbone attach.
1—¾ yd. Conco, Serial #1304, 30' boom.
1—¾ yd. Erie Model B2 crawler crane, steam powered, Serial #4027, with 50' boom and shovel attachment.

LOCOMOTIVE CRANES

1—25 Ton Industrial Crane, #2811, steam power, 40' boom.
1—25 Ton Ohio Crane, #2722, steam powered, 50' boom.
1—25 Ton Browning Crane, #1724, steam powered, 42' boom.
1—15 Ton Link Belt, steam power, #678, 40' boom.

CHAIN HOIST

1—20 Ton Chisholm Moore Chain Hoist, 17½" lift. Also chain hoists from 1 to 8 Tons.

HOISTS (Elec., Gas, Steam)

55—Electric ranging from 20 HP up to 125 HP, consisting of triple-drum, double-drum and single-drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyde, Lambert, Lidgerwood and National.
Gas hoists ranging from 8 to 120 HP single, double and triple-drums; all standard makes (38 in stock.)
Steam ranging from 8 HP to 60 HP, single, double and triple-drums; all standard makes.

DERRICKS

STEEL GUY DERRICKS:
2—20-ton American steel Derrick, 110' mast, 100' boom and 100' mast, 90' boom.
1—15-ton American, 83' mast, 75' boom.
1—5-ton Terry Guy Derrick, 70' mast, 60' boom.
1—5-ton Insley, 75' mast, 80' boom.
STIFF LEG DERRICKS:
1—25-ton Hunter, 40' mast, 80' boom.
Also a number of wood stiff leg derricks, 1 to 5-ton cap.
BARGE DERRICKS:
2—58-ton steel barge derricks, "A" Frame type, 27'-6" masts, 75' booms.

LOCOMOTIVES

1—15 Ton Vulcan, ser. #3903, standard ga.
1— 8 Ton Vulcan, ser. #3467, 36" ga.
1— 7 Ton Plymouth, 36" ga.
1— 7 Ton Whitcomb, ser. #12110, 24 ga.
All gasoline powered.

MOTORS (Elect.)

1—200 H.P. Allis Chalmers, Type AR, 1750 RPM, 440/60/3.
1—150 H.P. G.E. Type MT, 575 RPM, 220/60/3.
1—150 H.P. P. & H., Type HW-160, 575 RPM, 220/60/3. NEW.
1—100 H.P. G.E. Type 1-14, 900 RPM, 440/60/3.
1—100 H.P. Allis Chalmers, Type AR226, 1750 RPM, 2200/60/3.
Also a large stock of motors, from 5 to 100 H.P., AC and DC.

PUMPS (Elect. Centrifugal)

HORIZONTAL:
1—10x8" Weiman-Jaeger No. P-4201, power 50 H.P. AC motor; capacity 2500 GPM @ 35' head.
1—8x6" Worthington, 4 stage, No. 676005W, without power. Capacity 900 GPM @ 875' head.
1—8x8" Worthington, No. 816521, power 50 H.P. AC motor. Capacity 2000 GPM @ 30' head.
1—6x6" Morris, No. 109098, power 100 H.P., 2200-/60/3 slip ring motor. Capacity 1200 GPM @ 240' head. Shut off head 270'.
1—6x5" Fairbanks-Morse pump No. 441649, combination gas and electric power, one end Buda engine either power. Capacity 1000 GPM @ 150' head.
1—6x6" Deming pump No. DC41411, power 25 H.P. AC motor. Capacity 1000 GPM @ 70' head.
1—6x6" Allis-Chalmers No. 5418, power 40 H.P. AC motor. Capacity 1000 GPM @ 50' head.
2—6x5" Union pumps, No. 174832, 174415, power 20 and 15 H.P. AC motors. Capacity 650-750 GPM @ 99-40' heads.
1—5x4" Dayton-Dowd pump No. 4713, power 10 H.P. AC motor. Capacity 500 GPM @ 40' head.
3—5x3" Ingersoll Rand pumps, 2 stage No. 79574, 79575, 80252, power 100 H.P. AC motors. Capacity 525 GPM @ 500' head.
1—5x4" Dayton-Dowd pump, No. 4713, power 10 H.P. AC motor. Capacity 500 GPM @ 40' head.
1—4x4" LaBour No. 4738, power 20 H.P. AC motor. Capacity 400 GPM @ 90' head.

Also a large stock of gasoline powered, portable self priming centrifugal pumps, 2 to 8" sizes.

Dredging

1—10x10" Morris, size 10A, No. 86864, capacity 87 cu. yds. per hr.
1—8x8" Cataract, No. 175895, capacity 2000 GPM @ 25' head.
1—8x8" Morris dredging pump, capacity 60 cu. yd. per hr.
1—4x4" Hetherington & Berner, power 25 H.P. AC electric motor, capacity 450 GPM.
Also a large stock of portable cent. pumps, gasoline powered, 2" to 8".

All this equipment is owned by us and may be inspected at one of our plants.

WE BUY — REBUILD, SELL AND RENT.

CHICAGO 12, ILL.
1160 S. Washtenaw Ave.

PHILADELPHIA 2, PA.
P. O. Box 933—Dept. PQ

EQUIPMENT CORPORATION of AMERICA

PITTSBURGH 30, PA.
1513 Race St.

NEW YORK 7, N. Y.
30 Church St.—Dept. PQ

FOR IMMEDIATE DISPOSAL AND TO AVOID REHANDLING CHARGES WE OFFER AT UNUSUAL BARGAIN PRICES

1—940 CFM Ingersoll Rand Imperial Type 10 2 stage steam driven air compressor, size 19x12x12...$975.00
1—No. 6 McCully Superior Gyratory Crusher, 13" machine, right hand drive $650.00
1—No. 6 McCully Standard Gyratory Crusher, 13" machine straight drive $650.00
1—No. 3 McCully Standard Gyratory Crusher, 6" machine, left hand drive $500.00
Some new spare parts for Crushers as shells, spiders, aprons and shafts.
All machines loaded f.o.b. cars Red Granite, Wisconsin

IRON AND STEEL PRODUCTS, INC.
13490 S. Brainard Ave., Chicago 33, Ill.
"ANYTHING containing IRON or STEEL"

LOCOMOTIVES SHOVELS CRANES CARS

1—42½ ton Porter 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, entire new firebox, rebuilt.
1—26 ton American 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, thoroughly overhauled.
1—72½ ton Baldwin 0-6-0 separate tender switcher, full time I.I.C. papers, overhauled.
1—Whitcomb diesel locomotive, 36" gauge, with Caterpillar V-8 engine, air brakes, electric lights. This locomotive built in 1936 and has now been put in first class serviceable condition with new wheels, chains, sprockets, reversing gear, and bronze clutch plates. Weight is 20 tons in full working order.
5—Western 30 yard two way air operated side dump cars, standard gauge, **DROP DOOR TYPE,** first class condition.

BIRMINGHAM RAIL & LOCOMOTIVE COMPANY
Birmingham 1, Alabama

FOR SALE

Rebuilt K30 Link Belt 45' 1¼ yd. Dragline. Like new Byers ½ yd. ch. cwd. shovel attachment, fits 55, 60, 62 & 65 sizes. Lates Worthington 2 stage, 315' Diesel Hercules power, mtd. 4 rubber wheels. Perfect. Brooks CH200 2 yd. hoists & buckets, used little. 775A P&H 2 yd. 70' dragline. 3 & 3½ yd. Monighan draglines. Page 60' 2 yd. Diesel dragline.

WANTED—1 yd. old style Northwest shovel attch. 15" opening and larger jaw crushers & rock plants. 1-Tip over RR car dumper only.

KENNEY MACHINERY CO.
2136 Jefferson St., Kansas City, Missouri

2—No. 200 Rex double pumpcretes, excellent condition, with Waukesha 6-cylinder gas engines complete with pugmill remixers and 1,200 ft. 8" pipe.
2—30B Diesel driven caterpillar cranes with dragline and shovel attachments.
1—No. 480 Marion steam crawler crane without attachments.
1—Complete I-R No. 54 drill steel sharpener with one 27F oil furnace, one JF furnace, one shank and bit punch, cut-off machine, etc., etc., in guaranteed condition.
1—5 Cubic yard Owen clamshell bucket—weight 27,000 lbs.

GREAT LAKES DREDGE & DOCK CO.
122 So. Michigan Ave., Chicago 3, Ill.

MISCELLANEOUS

Chicago NSB air compressor, 14"x12", 529 CFM
National Double drum 25 hp electric hoist
Sauerman double drum 50-hp electric dragline
N. Y. Air Brake 6B Duplex steam air compressor
Worm drive speed reducers, 42-1
Electric motors, 1 to 75 hp.
Morris 6" manganese lined sand pump
Ellicott 4" belt drive sand pump
Two 6" centr. water pumps, 15 hp motors
4 and 8 ton gasoline locomotives
24" gauge flat and V shaped cars
400 hp V belt double pulley unit with belt
Waukesha 4 cyl. engine with speed reducer
3 steel pontoons, 4'x4'x14', ¼" plate

CONVEYOR AND PARTS

1000' 48" x 8 ply conveyor belt, prewar
1100' 30" x 6 ply prewar conv. belt
30" trough belt conveyor, 125 feet
24" trough belt conveyor, 100 feet
13' Jeffrey Standard Steel Apron Feeder
Portable conv., 20"x24', 5 hp motor
Belt conveyor pulleys, idlers and belt
Sandvik 24"x96' steel belt conveyor
Jeffery Foundry mold type conveyor, 42"x150"
Steel plate conveyor, 47"x26'
Link-Belt single flight conveyor, 15"x56'
Haiss portable belt conveyor, 14"x24 feet
Belt trippers for 14", 16" and 18" belt
Weller 36" Automatic horizontal belt take up
Screw take ups for belt conveyor, 12" to 12'
Screw and gravity conveyors
New and used conveyor belt

VIBRATING AND REVOLVING SCREENS

GYREX double deck 4'x10' vibrating screen
Simplicity three deck 3'x6' vibrating screen
Leahy single deck 4'x9' screen double vibrators
Plat-O single deck 3'x6' vibrating screen
Hummer single deck 3'x5' vibrating screen
Hummer single deck 4'x5' vibrating screen
15 cycle generators for Hummer screens
Revolving Screens: 4'x16', 4'x22', 5'x18'

CRUSHERS — ROLLS — MILLS

Buchanan 14"x30" C double roll crusher
Allis-Chalmers 16"x42" double roll crusher
Sturtevant double Laboratory Rolls, 8"x5"
Buchanan 10"x16" Blake type jaw crusher
New Eng. 11"x21" jaw crusher, cast steel
Traylor "BULLDOG" 11" gyratory crusher
Sturtevant No. 0 Rotary Fine Crusher
Midwest No. 2 hammermill
Robins double roll coal crusher, 24"x30"
Single roll coal crusher, 24"x24"
Simplex coal pulverizer, roller bearings
8 tons steel crushing balls, 1" to 2"
American Standard 24" disintegrator

BUCKET, ELEVATORS, CHAINS, PARTS

Bucket elevators, 16", 18", 20" on chain and belt
50' elevator, 12" malleable buckets on belt
Continuous 14"x50' bucket elevator on chain
Continuous 14"x35' bucket elevator on belt
Continuous 30"x40' bucket elevator, double chain
Grain elevators, 5" to 18" buckets on belt
500' No. 730 Pindle chain, 6" pitch
300' Jeffrey No. 1123 roller chain with attach.
200' No. 847 with K2, 400' No. 825 with A-42 attach.
600' Evarts No. 124, 300' xxs40 roller chain
Selected chain sprockets, new and used
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P & H Model 600 crawler gas crane and dragline, 50' boom, 1 yard capacity.
Barber-Greene Model 42 crawler gas disc type bucket loader, capacity 1¾ yards per minute.
Nelson Model Q3 crawler gas spiral feed bucket loader.
20-B Bucyrus crawler gas crane, 40' boom ¾ yard.
2—50 ton Porter std. ga. steam saddle tank locomotives.
Monighan Walker Type Diesel 3 yard dragline. Priced to sell quickly.

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Pullshovel Attach. for Lorain 75A or B.
1 Yd. Bucy.-Erie Gas-Air Shovel.
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50 HP Electric Hoists.
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Shovel Attach. for 41-B Bucy.-Erie.
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All, except one, mounted on 1940 Ford Chassis. Tires newly retreads, 34x7—10 ply Dual rear, 32x6—10 ply front. Two Speed Axle. Overload springs and reinforced frame.

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1—New 9" x 15" Beaumont Jaw Crusher
2—Used 9" x 15" Champion Jaw Crushers
1—10" x 20" Champion Jaw Crusher
1—12" x 20" Buchanan Jaw Crusher
3—12" x 26" Champion Jaw Crushers
1—4½" Traylor Gyratory Crusher
1—No. 2F Telsmith Gyratory Crusher
2—New Small Hammer Mills.

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Lansdowne, Pennsylvania

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1—Model P. A.-100 International Power Unit.

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60 HP Fairbanks Morse.
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RAYMOND MILL
5 Roll High Side.

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If crushed ledge rock is used it may be operated as a dry plant.

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100 Stone Skips 12' x 91" x 45" deep.
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1—8 ton VULCAN Standard gauge gasoline locomotive.
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42 x 60 Robins screen
36" switches and crossings

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1—Universal vibrating screen, 3 x 8. $200.00
1—Robins vibrating screen, 4 x 4.. $150.00
1—Universal sand drag, 4' x 20'.. $500.00
1—1yd. Kern hoist & Sauerman scrapper, 2 Sauerman blocks, 400' 5 in. cable, 800' 1½ in. cable..... $1000.00
1—½ yd. Smith hoist with ½ yd. Sauerman scrapper and cable..... $500.00
1—1 bag Knickerbocker concrete mixer $500.00
1—6" hydraulic dredge Morris magnesium pump. Service pumps, hoist for suction line, 500' of 6" pipe, 6 fittings included, enclosed flap valve and hand hole fittings. Pontoons 4 length 6" suction hose mounted on barge 10 x 30. Can be loaded on trailer..... $2500.00

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2—Std. gauge, 25 ton Browning, shop overhauled.

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2—4′x6x16″ and 6′x22″, iron lined.
1—5′x22″ iron lined, silent chain drive.
1—6′x36″ silex lined, silent chain drive and motor.
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2—Dorr Combination Bowl & Rake Classifiers, 10′ dia. with 2′3″x19′8″ rake and 12′ dia. with 2′3″x21′4″ rake.

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1—4 roll High Side, with air classifier, Raymond exhauster, cyclone collector and inter-connecting piping.
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1—30″x24′ long, heavy steel frame, semi-portable.
1—30″x120′ c/c, Rex-Stearns anti-friction idlers; steel frame.
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42"	5	1/8"	1/16"	20"	4	1/8"	1/32"
36"	6	1/8"	1/16"	18"	4	1/8"	1/32"
30"	6	1/8"	1/16"	16"	4	1/8"	1/32"
30"	5	1/8"	1/16"	14"	4	1/16"	1/32"
24"	5	1/8"	1/32"	12"	4	1/16"	1/32"
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14"	6	8"	6	4"	5
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	25 "	7.50
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1½"	50 "	15.00
	25 "	10.00
	35 "	14.00
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½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾"	25 "	6.25	2.50 "
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1—9 ton Whitcomb, 36" ga., gasoline.
1—20 ton Plymouth, std. ga. gasoline.

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25 ton Browning 8 wheel steam, 50' boom.

COMPLETE DIESEL POWER PLANT

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¾ yd. Osgood Comb. Crane & Shovel, 40' boom—diesel-operated.
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52-B Bucyrus-Erie Electric Combination 2½ yard shovel and dragline with 70' boom—2½ yard bucket. Rebuilt.

K-480 Link Belt Dragline, 75' boom and 2 yard bucket. 7 x 7 Hesselman oil engine. Rebuilt.

P & H Model 1250 Electric Shovel. 30'6" boom, 18'6" stick. 2½ yard dipper—4 years old.

Marion Model 37—1¾ yard Steam Shovel. New boiler. 32' boom, 22' dipper stick.

¾ yard Osgood Commander gas shovel. Rebuilt.

1½ yard Osgood Diesel Combination shovel and dragline, General Motors diesel engine, 1½ yard dipper, 60' dragline boom, 1½ yard dragline bucket. Completely rebuilt and guaranteed.

FRANK SWABB EQUIPMENT COMPANY
HAZLETON, PA.
Telephone 3906

FOR SALE: ⅞", 1", 1⅛", 1¼", 1½" Plow and IMPROVED PLOW STEEL ROPE, WIRE and hemp centers, NEW and slightly used, 6 x 7 and 19 construction; for Draglines, Dredging, Guys, Hoisting, etc.; 650 CFM Diesel Air Compressor; 110, 150, 180 HP Vertical and HORIZONTAL DIESEL Engines, belted; on HEAVY SKIDS; 500 HP Mine or Incline Motor, complete; NEW; Single drum 150 HP Electric Hoist; located in EAST and Middle WEST; WANTED, Scrap and good RUBBER Conveyor belts.
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For sale, New Pittman or Swinging Jaw without Die for 28 x 36 Traylor Bulldog Crusher.

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Atlanta 5, Georgia

FOR SALE

2—135 K.W., AC Generators, direct connected to Fairbanks Morse Diesel engines

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1622—So. 1st St., MILWAUKEE, WIS.

15 ton Industrial locomotive crane, gas
¾ yd. Northwest 105, gas crawler crane
18 ton Plymouth gas locomotive, std. ga.
1½ yd. Owen type K rehandling bucket
Try us for other equipment too.

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Phone: Harrison 1821

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36" x 48" JEFFREY — 2 Roll
Completely Rebuilt
New shells, new bearings, etc.
For friable materials, coal, etc.

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Concrete Mixer, Smith 56S, Tilting type, 2 cu. yd. capacity. Condition excellent.

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1—300 & 165 KVA A.C. Gens. D/C Full Diesels
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2—125 & 150 HP Scotch Marine Boilers, 125#
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1—750, 180, 176 & 150 HP Full Diesels
1—30 & 200 KW Belted AC Generators
1—50 KVA Ridgway AC Gen. D/C Steam Engine
4—500, 600 & 300 HP, 200#, W. T. Boilers
H. & P. MACHINERY CO., 6719 Etzel, St. Louis

ROAD GRAVEL PLANT: 9 x 36 Jaws, Rolls, Double deck vibrating screen, solid tires, without power, single unit. $4,000.00 f.o.b. cars.

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19—6,000 Gal., 8,000 Gal. & 10,000 Gal. Cap. Heavy R.R. Car Tanks with Heating Coils. Immediate Shipment from Illinois, Louisiana, New Jersey.

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1 Miles 39 Stripper Power Tamper
1 Miles automatic Feeder
1 Anchor stripper
1 Face Block Machine
1440 Steel pallets—40%
1000 Steel pallets—33⅓%
400 Cast Iron pallets—40%

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Riverhead, New York

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Two—Link Belt, steam operated, full revolving cranes — capacity 9½ ton @ 100' R.

Tail Swing only 21'-9". Excellent for barge mounting.

Ideal for coal-sand-stone-ore-ashes or lifting.

Condition like new.

Travel on two 30" ga. tracks set at 19' ga. Real bargains.

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Tel. Rittenhouse 7750

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HP	Make	Type	Volts	RPM
600	Al. Ch.	ANY	2200	1180
350	G. E.	MT	2300	300
300	G. E.	IM	2300	514
300	G. E.	IM	440	293
200	Howell	rlr. b.	440	600
100	Westg.	vert.	2200	1160
100	G. E.	IM	2200	1800
100	G. E.	IM	2300	600
100	Westg.	HF	440	230
75	Northw.	HW	220	1740
75	Lincoln	IXN	220	900
75	G. E.	MT	2200	900
50	G. E.	MT	2200	1200
50	G. E.	MT	220	900
50	Westg.	HF	440	860
50	Al. Ch.	ARY	220	690
50	G. E.	MT	2200	600
40	Wagner	TBR	440	1725
40	Al. Ch.	ARY	220	1160
35	F. Morse	vert.	220	1800
30	G. E.	MT	440	1150
30	Wagner	BR	440	850
25	G. E.	IM	440	1740
25	Century	SR	416	1170
25	G. E.	MT	2200	570
20	G. E.	MT	220	1710
15	Wesche		220	1200
5	G. E.	vert.	220	820

CHICAGO ELECTRIC COMPANY
1329 West Cermak Rd., Chicago 8, Illinois

FOR SALE

CRUSHING PLANT & QUARRY EQUIPMENT

1 32"x8' Gates Iron Frame Revolving Screen
3 4'x5' Tyler Hummer Electric Screens
40 Assorted Tyler Screens
1 No. 3 Style "C" Gates Geared Head Elevator
1 No. 4 Style "C" Gates Geared Head Elevator
1 X72 I-R Drifter Drills
2 S-49 I-R Jack-Hammers
1 Type 27 Tripod for Drifter Drill
1 I-R Air Hoist—Size D, No. A19687
1 Pangborn Au3 No. 1 Sandblast Machine
1 Rumelin "Square Shooter" Sandblast Curtain
1000 ft. 1½" Plow Steel Cable
100 ft. 1½" Air Hose

BARNEY JOHNSON, Owner
MELLEN, WISCONSIN
(For further information of description contact Leo G. Bye, Ashland, Wisconsin)

FOR SALE

2—300 Marion Steam Strip Shovels, 90', 56', 6 yd.
2—262 Marion steam shovels, 5 yd.
1—1400 P. & H. Elec. Dragline, 110', 4 yd.
1—23W. Monighan Walker Dragline.
1—37 Marion Elec. Dragline, 45' boom.
1—37 Marion Steam Shovel.
76 Marion Stone Shovel, 3½ yd.
2½-3½-5 & 6 yd. dippers.
2 yd. clamshell bucket.
2—50 B Bucyrus steam shovels.
Lot Cent. & Plunger Pumps.
1 yd. Brownhoist Elec. Crane on cats, 55' boom, 1 yd. Owen bucket.
10—4 yd. Koppel Steel Side Dump Cars, 36" ga.
Gasoline & Steam Locomotives, 36" ga.
150 ton Buffalo R. R. Scale, 56 ft.
18½ ton Howe Truck Scale, 18', 90% new.
20 ton Bonded scale, 24 ft.
12 x 26" Champion Jaw Crusher.
2-Bucket Elevators on chains, 45 ft.
3-T Monighan Walking Dragline Diesel.
Wanted: Shovels, Draglines, Bulldozers, Crushers, Etc.

McCARTNEY MACHINERY CO.
Box 35-SS, Youngstown, Ohio

SHOVELS—CRANES

Bucyrus-Erie 37B shovel. Gas.
Bucyrus-Erie 20B Electric Shovel 1 yd.
Marion 37 Electric shovel 1¾ yd.
Marion 371, 1¾ yd. Shovel, Crane, Dragline
Marion elec. shovel, 1¼ yds.
Lorain 75B shovel and crane, 1½ yds.
Bucyrus-Erie 42B Steam shovel-crane
P & H 650 shovel-crane
Browning 10 ton Truck Crane
P & H 203A, 3 ton Truck Crane
Byers Bearcat ½ revolving Crane, 5 tons cap.

SPECIALS!!

Allis-Chalmers cent. pump, electric, 3500 GPM, 50'
2 tons Drill Steel 1¼", shanked and bittered
Worthington 8" cent. bronze impeller, elec. Pump
Rotary Screen 4'x18' with Bucket Elevator 40'
200-ton 2-compartment Steel Rock Bin

BUCKETS—STONE SKIPS

⅞ yd. Blaw-Knox Clamshell, digging
⅞ yd. Hayward Clamshell, digging
Hayward ¾ yd. Standard Orange Peel
⅞ yd. Williams Clamshell, digging
⅞ yd. Haiss Clamshell, digging
½ yard Haiss Clamshell, rehandling
¾ yard Haiss Clamshell, rehandling
Erie ¾ yd. Clamshell, rehandling
20—2½ to 3 yd. Battleship type Steel Stone Skips

TRACTORS—BULLDOZERS

Int. TD18 tractor with bulldozer, rebuilt
Int. TD40 tractor with bulldozer, rebuilt
Allis-Chalmers Model WS tractor with 8 yd. hydraulic scraper
Allis-Chalmers Model L with bulldozer

CRUSHERS—CRUSHER PLANTS

Roll Crushers, 54 by 20; 20 by 40; 30 by 24; 16 by 24; 16 by 42.
Sturtevant No. 2 Ring Roll Mill.
Gyratory Crushers: K.V.S. 30, 49; Traylor 8", 10", 12", 14". McCully 13", 8", 6".
Jaw: 10x22, 10x24, 10x30, 11x18, 11x21, 12x22, 12x24, 14x24, 14x25, 15x32, 16x32, 16x36

LOCOMOTIVES—CARS

American 60 ton, steam, std. ga.
American 45 ton, Saddle Tank
Vulcan 25 ton side saddle tank, steam, std. gauge
Plymouth 30 ton standard gauge Saddle Tank
Vulcan 30 ton Steam, Saddle Tank
Porter 13 ton, Steam Saddle Tank, 36" gauge
Baldwin Westinghouse 8 ton, 36" ga. Battery
Vulcan 6 ton, 36" gauge, gas
3—Western Steel 20 yard Air Dump Cars
3—30 ton Standard Gauge Flat Cars, rebuilt

CONCRETE PLANT & EQUIPMENT

2—Ransome 28S Mixers on skids, left and right hand
Koehring 34E Dual Drum Paver
Fuller Kinyon Bulk cement unloader
Pauers—27E—2 Koehring, 1 Multi-Foote 1 Rex
Rex Pumpcrete Models 160, 180, 190 and 200

RICHARD P. WALSH COMPANY
30 Church St. New York, N. Y.

FOR SALE

One 100 H.P. GE Slip ring motor, 3 phase 60 cycle, 440 volt, 1800 RPM with drum control and grids $850.00.
Also one P&H ditching machine serial No. 1064 KC 105 wheel type. This machine will dig a trench six and half foot deep, sixteen to twenty-five inches wide $2850.00. One Sargent 2¼ yard dragline fifty foot boom six cylinder Twin City gas engine good shape; can demonstrate: $5500.00.
One 200 HP G.E. type I form M 440 volt, 580 RPM variable speed control, grids oil switch and ammeter 31" Rockwood pulley, $1550.00.
All machines referred to above in good shape and ready to go to work.

D. K. ELLINGWOOD
1801 Twinridge Blvd., Omaha, Nebraska

DIESEL ENGINE AND GENERATOR

Fairbanks-Morse model 32-D-14 full Diesel engine, 4 cylinder, vertical 280 H.P., 300 R.P.M., direct connected to Fairbanks-Morse 186 K.W. alternator. P. F. .8, 480 volts., 3 phase, 60 cycles. Direct connected exciter, switchboard, and starting equipment.

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• • •

DENNY & CLARK
910 N. Marshfield Ave., Chicago 22, Illinois

FOR SALE
MARION ELECTRIC DRAGLINE

Type 125—Serial No. 6631
80' Boom with 7½ yd. Lightweight Bucket
Ward-Leonard Control
Located at — Oakland, California

Henry J. Kaiser Company
Oakland, California

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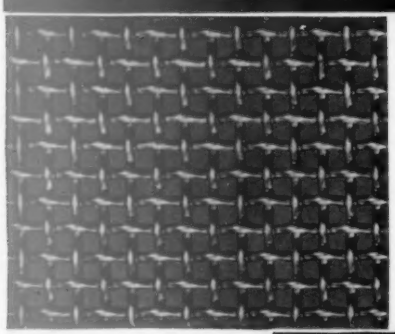

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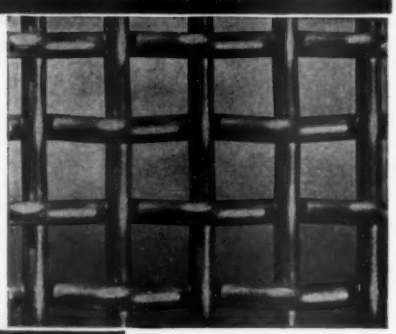

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